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THE MONTH

The Symposium

In many ways our symposium this month, on 'Minor maladies of childhood', is complementary to last month's symposium on 'Domiciliary care'. These minor maladies of childhood have today a threefold significance for the family doctor. The conquest of the major infectious diseases has resulted in a much larger proportion of the illness of childhood being of this character. Gone, for all practical purposes, are the dramatic days of emergency tracheotomies for diphtheria, the all-night vigil over the child with bronchopneumonia balanced precariously on the razor edge twixt life and death, and the case of measles suddenly complicated by an 'acute mastoid'. Instead, we have the 'minor maladies' which the practitioner can often deal with himself or, if pathognomonic of more serious disease, can pass on at an early stage to the specialist. The child of today is not only the parent of tomorrow, he is also the link which binds the parent of today more closely to the general practitioner, thereby converting him into the family doctor who guides the family through health and sickness. The practitioner who understands children, and is in turn understood by them, is the most stabilizing influence in the community at the present moment, and it is by his ability to deal with the 'minor maladies of childhood' that he can do most to retain this hold on the family life of the nation. Perhaps the most interesting feature of the symposium is the emphasis which is so consistently laid upon 'management' as opposed to 'treatment' in the narrow therapeutic sense which this latter term has tended to acquire of recent years. It is not only in the treatment of tics that, to quote Dr. Apley, 'the successful doctor is the one who treats the patient rather than the symptom, and offers guidance rather than a prescription'.

The British Pharmacopœia

The publication of the ninth *British Pharmacopœia* (London: The Pharmaceutical Press, 1958. Price 63*s*.) which becomes official on September 1, marks the centenary of the 'Pharmacist's Bible' becoming the responsibility of the General Medical Council. It also marks the thirtieth anniversary of the constitution of the Pharmacopœia Commission to which the preparation of the *Pharmacopœia* has been delegated since 1928. The commission is appointed by a selection committee consisting of representatives of the General

Medical Council, the Medical Research Council, and the Pharmaceutical Societies of Great Britain, of Ireland, and of Northern Ireland. Although it was not until 1864 that the first *British Pharmacopœia*, as we now know it, was published, 1958 may justifiably be regarded as the centenary year of this august publication. In view of its unrivalled reputation today for accuracy and reliability, it is of interest to recall that so many inaccuracies were found in the first edition that a second edition was brought out three years later.

Of all the changes that have occurred in the intervening years, the one which would probably cause most surprise to the progenitors of the first *Pharmacopœia* would be the welcome announcement that 'The Commission has expressed the view that arrangements should be made so that the Imperial system of dosage might be abandoned in the next edition'. What would be almost incomprehensible to them would be the inclusion of monographs on sodium radio-iodide and sodium radiophosphate. To the future historian of the present era of medicine these two monographs will mark out the ninth edition as a historic event in medical progress—the first official recognition of the atomic age in medicine. The other additions include antibiotics such as bacitracin, erythromycin and neomycin, corticosteroids such as prednisone and prednisolone, several antihistamines, and a tranquillizer—reserpine. The deletions are equally impressive as a record of changing prescribing habits—amyl nitrite, neoarsphenamine, sulphanilamide and sulphathiazole are all relegated to the limbo of forgotten things. The disappearance of these last two preparations—the first of the sulphonamides—is perhaps the most striking commentary on the speed at which therapeutics are advancing. It is just over twenty years since the sulphonamides were first introduced, constituting what Dr. D. M. Hughes in his James Mackenzie Lecture (*The Practitioner*, 1958, **180**, 95) described as 'the great divide in therapeutics, the turning point in the treatment of infectious disease'.

Certification of the Aged

THAT the law regarding mental disease requires amendment no-one would deny, but the necessity for such amendment is no excuse for the sweeping statements that are too often made on this subject—particularly in Parliament. Typical of such statements was the one to the effect that 'old people who are not insane are, because of expediency, being certified in a terrifying way'. It is not surprising that those who are responsible for the care of the elderly are becoming restive under this barrage of public criticism. What is too often overlooked is the fact that before the introduction of the National Health Service it was possible to deal with old people suffering from senile mental changes in Poor Law Institutions by retaining them there on permanent detention orders which, although providing the same measure of care and restraint as would obtain in a mental hospital, did not require

the form of certification and transfer to a mental hospital which is now the only way of dealing with these old folk.

That the system is not abused in at least one large area is amply demonstrated by a report which Dr. A. Elliott, the county medical officer for Kent, presented recently to his health committee. This was based upon a personal examination of the records of all persons of 65 years and over in Kent who were removed to mental hospitals under compulsory powers during a period of five months. As a result of this survey Dr. Elliott was satisfied that the duly authorized officers were 'using an imaginative and humanitarian approach to the question of dealing with these old people and whenever possible were avoiding the use of compulsory powers'. Typical of the cases dealt with in this way were the old lady of 87 who had tampered with her fire while in her nightclothes and had escaped supervision, walking out into the main road in her night attire, and the old man of 81 who had to be certified because of his attacks on his wife. It is difficult to believe that the position is so very different in other areas, and there is every reason to believe that the mentally unstable aged in our midst are being shown the same kindness and consideration as their contemporaries with physical ailments.

Two Languages ?

THE glory of the English language has always been its adaptability and flexibility. It is as illogical as the British Constitution but correspondingly amenable to some of the greatest writers of all time. Perhaps the greatest tribute to its virility is the way in which the other great English-speaking nation has attempted to rationalize certain of its more glaring anomalies—particularly in the sphere of spelling—while at the same time resurrecting many of the more archaic terms which are seldom used in ordinary writing in the 'old country'. This difference of spelling—mainly on the part of the Americans towards simplification by elimination of diphthongs—has never caused confusion hitherto, but apparently it has proved too much for the World Health Organization, for, in the index volume of the recently published 'Manual of the international statistical classification of diseases, injuries, and causes of death', both 'English' and 'American' spellings are listed separately. Thus, on pages 24-25 all the causes of 'anæmia' are listed, whilst the list is repeated on pages 26-27 under 'anemia'.

This, of course, is the *reductio ad absurdum* of bureaucratic reasoning and an excellent example of how 'internationalism' can be the antithesis of international cooperation by giving official recognition to national differences which are of no significance. It is possible to understand and sympathize with the French who have recently established an 'Office du Vocabulaire Française' for the purpose of defending the French language against the incursion of foreign words, but it is impossible for an Englishman to understand why his language should be artificially divided as the WHO has just

done. In the present state of international affairs it is unfortunate—to say the least of it—that the WHO, of all organizations, should have gone so far as to suggest that the two great English-speaking races should have different languages. It might be argued that the time has come when we should attempt to rationalize our use of a common language, but whether this is advisable is a matter upon which opinion must be divided.

Bruegel as Medical Artist

PIETER BRUEGEL THE ELDER, who has been described as 'the greatest of Flemish artists between Van Eyck and Rubens, with something of the qualities of both', is probably best known for his peasant-village scenes. As with every great artist, succeeding generations have read a multiplicity of meaning into his works, down to the surrealists who have claimed him as a forerunner of their bizarre form of art. Even those who hailed him as a vivid recorder of the contemporary Flemish scene tended to suggest that his morbid imagination increasingly ran away with him and that he overemphasized the grotesque and depicted deformity for deformity's sake.

According to an M.D. thesis recently submitted in Paris and reviewed in *Le Monde*, however, Bruegel's figures are exactly true to life and depicted with such exactitude that it is even possible to diagnose the diseases from which they are suffering. Thus, in the 'Battle between Carnival and Lent' there is a classical example of gangrene due to thromboangiitis obliterans which has resulted in the loss of both feet and part of an arm, and an advanced case of tabes—the unfortunate victim dragging himself along on his hands with his lower limbs in gross contracture. His equally well-known 'Wedding Feast' contains two accurately depicted examples of thyroid disease—one of thyrotoxicosis and one of myxœdema. In 'The Blind leading the Blind' there are said to be five distinct forms of blindness depicted: ocular pemphigus, corneal leucoma, atrophy of the eyeball, amaurosis, and enucleation of the eye. Even in his more macabre masterpieces, such as 'The Temptation of St. Anthony' and 'Mad Meg', the inspiration for which has always been attributed to Hieronymous Bosch, Dr. Torrilhon, the author of the thesis, contends that Bruegel is depicting recognizable forms of insanity. 'The Temptation of St. Anthony', for instance, is said to be a perfect representation of the hallucinations of 'délire mystique', whilst 'Mad Meg' is said to be an equally perfect representation of chronic menopausal psychosis—even down to the cardboard cuirass which these unfortunate women used to wear in order to protect themselves from the demons which surrounded them. Dr. Torrilhon's thesis may not commend itself to the art critics, but it should provide a stimulus to his fellow-doctors to renew their acquaintance with the masterpieces of the great Flemish painter.

THE DEBILITATED CHILD

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SINCE this symposium is concerned with minor disorders, the children under discussion will not include those with an obvious disease to account for their symptoms, but will be those whose debility has no very obvious cause, and in whom a large number of factors are involved. Debilitated children are less often seen than of old, owing to an all-round improvement in their feeding and environment, a lowered infection rate, and more sensible handling, coupled with a better understanding of their needs and of the normal progress to be expected. Nevertheless, it is still these factors which account for such debilitated children as are seen today.

DIET AND ENVIRONMENT

Photographs of school groups taken at the beginning of this century show many of the children to be debilitated, and it is certain that insufficient food, and particularly lack of protein, played a part in its production. Today, with the higher standard of living, lack of food is a less frequent cause, though a poorly balanced diet may still play a part, and particularly one lacking in protein with carbohydrate excess. In this case it is more often a matter of maternal ignorance or mental retardation rather than poverty, and there are many mothers whose domestic skills are quite unequal to the task of preparing a variety of appetizing meals. The basic appetite of these children is usually good so that it is only a matter of seeing that they are given the right sort of food. In contrast, the child who won't eat for functional reasons is not usually debilitated. The decreased incidence of the condition is also related to an improvement in the clothing and housing of the children of today, although there is still much to be done in this direction in the overcrowded areas.

INFECTION

How many of the children in these old photographs had a runny nose? Low-grade infection and particularly recurrent upper respiratory infections are still an important cause of debility, and the fact that they are more commonly found in the lower social classes emphasizes the importance, as causal factors, of poverty, diet, and neglect, combined with poor hygiene. Cross-infection plays its part in the recurrence of these upper respiratory infections so that the greater the number of children in the house and the closer their proximity, the greater is the risk. The parents may also be to blame and it is often found that one or other suffers from recurrent bouts of tonsillitis, and that where this has been severe enough to warrant tonsillectomy in the parent, the children have benefited.

Although poor standards of hygiene are most commonly found in the less well educated they are by no means their prerogative. Particularly is

this true of inadequate ventilation and over-clothing, which are additional factors in the recurrence of upper respiratory infections and of skin sepsis such as recurrent boils—a further type of low-grade infection accounting for debility in childhood. It is the over-anxious mother, often with only one child, who believes that fresh air and particularly 'night air' is dangerous for her child, and the child is to be found grossly over-clothed in a house whose windows are tightly closed, whilst at night an oil heater is often to be found adding its fumes to the stuffy atmosphere. When this child is allowed out of doors, and this is seldom during winter, his protection against the weather is so heavy that he has little inclination to run around. In the summer he is still given more clothes than necessary, even though his mother may be wearing a summer frock; so that the lesson to teach his mother is that the child only requires the same number of layers of clothing as herself. It is not surprising that such children develop repeated respiratory infections, when it is remembered that fresh air has been shown to be of such importance in the treatment of pneumonia. The same applies to skin infections, and there is much truth in the old dictum that the skin must be allowed to 'breathe' and not be wrapped in tight woollen clothes.

The sequel of debility after influenza is a recognized clinical state and does not necessarily occur in those whose general health was low before the attack: often the children affected have been the most active prior to the illness.

EMOTION

The debilitated children so far discussed have had some obvious and organic reason to account for their poor condition, but there is another group in which the cause is not so apparent and is bound up with unsatisfied emotions. Children are quick to sense a lack of parental, and particularly maternal, love, and will react by a falling off in interest, loss of energy, and reduction in their appetite, so that the face becomes pallid, the muscles hypotonic, and the normal gleam disappears from their eyes. Especially will this result if their life is monotonous and lacking in outside interests. The pleasant company of other children will do much to maintain their normal interest in life even where home affections and normal parental ties are loose or broken. Nothing can compensate the child for the normal love from his parents, but where this is non-existent the removal of that child to a small family unit into which he can enter as an equal, will often work wonders.

In this group the condition has resulted from inadequate parental affection, but in other cases where this affection is normal, the child's symptoms may be set off by his sudden and mistaken belief that he has lost this affection, and particularly that he has lost his mother's love. This is all too liable to occur after the birth of a new baby who requires so much of the mother's time that it is easy to see how the older child, particularly if he has been the only one, feels bereft of affection. These feelings are shown by irritability and loss of appetite combined with jealousy and aggressive behaviour towards the baby. If the older child is handled intelligently and

is allowed to help in the care of the new baby the problem should be rapidly resolved, but if it is not dealt with promptly the symptoms may lead to debility. The prevention of this problem lies in the correct preparation of the older child during pregnancy so that he is not only ready for the arrival of the new baby, but is looking forward to helping his mother to care for him.

A similar problem may arise when the mother is suddenly removed to hospital for an acute illness. The problem is worse if she is removed in labour, when a home confinement had been planned, since her return will probably coincide with the older child's first view of the new baby and the child is quick to believe that he has been deserted for the baby. If such an occasion should occur in labour the older child should have a chance of seeing his mother go and the reasons explained to him. Nothing is more disturbing to a child than to find his mother has disappeared in the night, and whenever possible the child should be woken so that he can say goodbye to his mother and can thereby more easily understand the reason for her hurried departure.

APPARENT DEBILITY

Finally, there is the child whom the parents incorrectly believe to be debilitated because he looks so thin. This occurs particularly with boys between the ages of eight and eleven, and is the result of ignorance of a child's normal growth pattern. If a group of boys of this age are seen together at the swimming baths one is struck by how apparently skinny they are, although they are in fact quite normal. Growth in children is not a steady process from the date of birth until the fusion of the epiphyses after puberty—rather is it a matter of three spurts of growth with relatively little increase between.

The first of these three spurts of growth occurs during the first two to three years of life, the second—a short one—takes place between six to seven years of age, whilst the last and greatest is at adolescence. It is during the two fallow periods from three to six years, and eight to puberty that parents become most anxious, although an explanation of these facts is usually sufficient to allay their anxiety. An examination of children between ten and fifteen will show a quite remarkable variation in height and size which is dependent on the timing of puberty. If puberty is early then its associated growth spurt also occurs early and the child may literally be head and shoulders above his peers, but those whose adolescence is later will catch up and in fact may have the advantage of becoming taller in the end, since the earlier the puberty the earlier do the epiphyses fuse. While these spurts of growth are taking place the child, though energetic at times, is found to tire easily. This is most noticeable during the tremendous growth spurt of adolescence when the child is often described as having 'outgrown his strength'. Provided the mechanism of this early tiring is understood then this descriptive phrase has much to commend it, but it must be understood that the symptom is of physiological origin and not the result of ill health, and that once the rate of growth has slackened he will regain his

old composure and no longer tire so easily. Often in the past, children of six to seven had their tonsils and adenoids removed in an attempt to remove these symptoms, and their natural improvement at the end of the growth spurt was then credited to the operation. On the other hand, the child whose debility is due to upper respiratory sepsis may well be improved by the removal of his tonsils and adenoids so that a most careful assessment of the child must be made in order to differentiate those whose debility is the result of upper respiratory sepsis from those with the 'physiological debility' of normal growth. Although he does tire easily, the child who is growing rapidly will have periods of intense energy and activity, and it is this energy which is the best indication that he is normal. Of all the signs of good health energy is the most valuable, and I have yet to see an ill child who is energetic. It is the child who is off colour and no longer energetic who must be regarded with suspicion, for some underlying illness such as tuberculosis may account for his symptoms.

The widely differing time of puberty has been shown to account for the individual variation in stature at this period, but such variation exists throughout life, and parents cause themselves needless anxiety by comparing the size of their children with others of the same age, often even forgetting the elementary fact of the difference in size of the respective parents. Such worrying parents will search widely for possible causes to account for their belief that the child is unwell, and one of the commonest reasons they invoke is the almost superstitious one of 'worms', so that the child in whom no worms have been seen will be de-wormed as though he were little better than a dog. In this country tapeworms are rare, and even they are not usually associated with poor growth. Threadworms, which are common, show no particular association with inadequate growth except in so far as they may be associated with other causal factors such as poor hygiene and nutrition. Only if worms or their eggs are found should the child receive treatment, and even then some other explanation must be sought to account for his slow growth.

SUMMARY

Apart from obvious disease the commonest causes of debility in childhood are:—

(1) Poor diet and environment, associated with unsatisfactory hygiene and often the result of maternal ignorance or backwardness.

(2) Low-grade infection, especially recurrent upper respiratory infections and skin sepsis.

(3) Emotional deprivation from lack of normal affection.

As a separate problem there are the many children whose parents believe them to be debilitated because they are incorrectly thought to be too thin. This is due to parental ignorance of a child's normal growth pattern and in particular of the fact that children, especially boys, between seven and ten years are normally skinny.

MINOR DIGESTIVE DISTURBANCES IN CHILDHOOD

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THE minor disorders of the digestive tract are those of function rather than structure, and having no demonstrable pathology they rarely upset the body's chemical equilibrium. Nevertheless, they are responsible for an enormous amount of parental anxiety. It is unfortunate that this type of problem is so often approached symptomatically as this can be a dangerous diversion from the road to accurate diagnosis, especially when it is taken by those who substitute 'personal impressions' for a sound knowledge of physiology and psychology.

MINOR DISTURBANCES OF INFANCY

The majority of digestive disturbances in young infants are due to incorrect feeding. They have become much less common since the introduction of dried or evaporated milks. These have made artificial feeding so much easier and safer than when liquid cow's milk, often unboiled, was the standard substitute for human milk. In fact, the only really dangerous mistakes which are commonly made with modern preparations are underfeeding and the introduction of infection from dirty hands or utensils. Overfeeding cannot do a healthy infant any serious harm. The fear of overfeeding has often been a potent cause of underfeeding (Vining, 1952; Wickes, 1952). A healthy infant will thrive on any of the dried or evaporated milks available in this country if he is given a sufficient quantity. The attempt, which is often made, to relieve an infant's digestive upset by transferring him from one product to another only delays an adequate search for the real cause of his trouble. It should further be stressed that the advice commonly given to a mother that she abandon breast-feeding her infant because her milk 'disagrees' with him is, with one exception, always wrong. The exception is the very rare disease, galactosæmia.

UNDERFEEDING

This is the commonest cause of trouble in the artificially fed infant. It is much less dangerous in breast-fed infants. Diagnosis should be easy if a careful history is taken, when it will be found that the intake of food is inadequate, that is to say, less than 50 calories per pound (110 calories per kg.) of the infant's expected weight per day. In this connexion, it should be remembered that the common practice of measuring dried milk in teaspoonfuls instead of in the measures supplied by the makers, and of measuring volumes in tablespoonfuls instead of ounces may lead to gross inaccuracies. In the breast-fed baby, the diagnosis can be confirmed by test-weighing him

before and after every feed for twenty-four hours. A single test-weighing after one feed is valueless.

The underfed infant fails to gain weight (at least 5 ounces [140 g.] per week) and later loses weight until a state of marasmus develops. Irritability and sleeplessness are early symptoms, and the infant cries for feeds much more often than the normal four to six a day. At first he will feed greedily and often swallows air so that colic and vomiting aggravate his misery. The breast-fed infant after initial enthusiasm goes to sleep or withdraws from the nipple and starts to cry disconsolately. Finally, the infant becomes too feeble to suck and his loud cry of frustration gives place to a high-pitched wail. The stools, small, hard and infrequent at first, are later replaced by small frequent passages of dark green mucus—'starvation stools'. These have often been confused with the large fluid grass-green stools of gastro-enteritis with the disastrous result that the feeds have been reduced still further.

The treatment is obviously to increase the quantity of food offered. In the case of the breast-fed infant complementary feeds of a dried or evaporated milk mixture should be given after each breast feed. In the first week of life complementary feeds should be avoided lest they prevent the satisfactory establishment of breast feeding. Infants vary considerably in the amount which they consume. It is only necessary to remember that, whilst under-feeding may be dangerous, overfeeding never is. Feeds should not be prescribed like dangerous drugs. No infant has ever died from an overdose of milk.

VOMITING

Many serious diseases, enteral and parenteral, cause vomiting, but most infants who vomit do not have a serious disease. It is essential that an accurate diagnosis be made in each case. Symptomatic treatment, such as changing the milk product or prescribing antispasmodics, may be dangerous by delaying diagnosis and specific treatment. The diagnosis of 'a weak digestion', with consequent dilution of the feeds and an increase in the frequency of feedings, is always wrong.

Possetting, or the vomiting of mouthfuls, is common, especially in breast-fed babies, and obviously not serious. Perhaps the commonest reason for true vomiting is air-swallowing, which may also cause colic. This may be due to an excessively small hole in the teat, to underfeeding, or to nasal obstruction from a simple rhinitis, all of which are easily diagnosed and corrected. Rhinitis is best treated by the nasal instillation, before feeds, of drops of 1 per cent. ephedrine in normal saline. Oily preparations are better avoided in case some of the oil finds its way into the lungs where it may set up undesirable lung changes. Air-swallowing may occur in the breast-fed infant because he is not allowed to get enough of his mother's breast into his mouth. He should gulp in the nipple, the areola and some of the soft breast-tissue behind. He should not be held supine but in a semi-erect posture in the crook of his mother's arm.

Vomiting of bile is often a sign of intestinal obstruction in infancy and should indicate the need for immediate admission to hospital. In pyloric stenosis, vomiting, never of bile, starts between the second and fourth week of life, is projectile in character and associated with visible gastric peristalsis and a palpable pyloric tumour during or immediately after a test-feed. The appearance of altered blood in the vomit suggests hiatus hernia and indicates the need for radiographic screening during the swallowing of a suitable barium emulsion. This is a specialized technique which should only be performed by an experienced radiologist.

There remains a group of infants who vomit habitually although they seem to be adequately fed and clinical examination proves unhelpful. In a few, a barium-swallow shows apparent laxity of the cardia so that stomach contents can be made to regurgitate back into the œsophagus. This is called chalasia of the cardia. I have always doubted whether in the absence of hiatus hernia, these appearances are really abnormal in infancy. It has to be admitted, however, that 'habitual vomiting' is often relieved by thickening the feeds with a cereal and by keeping the infant, day and night, in an upright position either by pillows or a special 'box' made for the purpose. Pylorospasm has also been invoked to explain some cases of habitual vomiting. This has likewise seemed a doubtful concept and I have found antispasmodics to be singularly ineffective. It is interesting that Atkinson *et al.* (1957) have recently failed to demonstrate any evidence of a pyloric sphincteric mechanism in adults. Many infants who vomit without demonstrable organic cause are characteristically hypertonic and hyperactive. Their parents are often tense and overanxious, possessing a remarkable capacity for resisting reassurance. Whilst it is difficult to decide whether the restless infant makes the parents tense and agitated or vice versa, sedation of the infant with chloral hydrate, 1 to 3 grains (60 to 200 mg.), or sodium phenobarbitone, $\frac{1}{8}$ grain (8 mg.), before each feed is often most effective in stopping vomiting.

Rumination is a psychoneurosis of infancy. The infant obtains oral gratification by bringing part of his feed back into his mouth and chewing it somewhat after the fashion of a ruminant animal. He achieves his purpose by curling his tongue into a funnel and moving his jaw forwards in a rhythmic fashion. He may even induce vomiting by pushing his fingers down his throat. This habit may occasionally cause actual loss of weight. Treatment is often difficult, but spontaneous recovery can be expected by the time the child can stand. The feeds should be thickened with cereal and the infant's attention should be distracted whenever he is seen to indulge in his habit. Rarely it may be necessary to arrange the child's admission to hospital.

Milk allergy as a cause of vomiting seems to be a common diagnosis in some American clinics but it is very rare in the United Kingdom. Treatment by desensitization or cortisone is difficult and best placed in the hands of a pædiatrician.

CONSTIPATION

Bottle-fed infants pass stools of much firmer consistency than breast-fed

infants. Some have infrequent stools, perhaps only three each week, although the stools are of normal consistency. This is not constipation. The only common causes of true constipation in infancy (when the stools are hard) are underfeeding and excessive sweating due to overheating or overclothing. These should be corrected and further treatment directed to increasing the food or fluid intake and perhaps to adding extra sugar to the feeds. Organic causes of constipation such as anal stenosis or cretinism should be recognized if an adequate physical examination is carried out. In congenital megacolon (Hirschsprung's disease) constipation is associated with recurrent attacks of incomplete intestinal obstruction, and digital examination reveals an empty rectum. These conditions will not yield to laxatives which are rarely indicated in young infants. Preparations which contain mercury are contraindicated in all circumstances.

DIARRHŒA

'Dietetic diarrhœa' due solely to relative excess of protein, carbohydrate or fat in the diet probably does not exist. The healthy breast-fed baby may pass frequent loose, sometimes green, stools. This is not diarrhœa. Gastroenteritis is rare in breast-fed infants. True diarrhœa which causes excess loss of body fluid and loss of weight is always due to infection, enteral as in gastroenteritis and dysentery, or parenteral as in otitis media, pyuria or osteitis. Clinical signs of dehydration appear when the infant loses 5 per cent. of his body weight (Medical Research Council, 1952).

Mild cases are best treated at home. Feeds should be withdrawn for twenty-four hours and replaced by half-strength physiological saline (half-a-teaspoonful of table-salt to 1 pint [570 ml.] of water) given at hourly intervals. Feeds should then be reintroduced in gradually increasing quantities or concentrations. An antibiotic such as tetracycline or neomycin probably hastens recovery in enteral infections. Severe vomiting or dehydration indicates the need for urgent hospital treatment.

COLIC

When infants cry vigorously they often flex the thighs on to the abdomen. Mothers usually interpret this as due to 'wind' and they are usually wrong. More often the crying has a different cause such as hunger, overheating or chilling, a wet napkin, and often a sense of insecurity occasioned by a worried inexperienced mother. When an infant suffers severe pain, as in intussusception, the spasms produce vaso-vagal signs such as blanching and a cold clammy skin. Less severe colic is caused by air-swallowing, which has already been discussed. Illingworth (1954) has given a detailed description of the somewhat mysterious 'three months colic'. It is rarely seen much later in infancy. The attacks, which last from two to ten minutes, usually occur between 6 and 10 p.m. The infant goes red in the face, draws up the legs and screams loudly. He is not consoled by an extra feed or by being picked up. The only effective measure is sedation with chloral hydrate, 3 to 5

grains (0.2 to 0.3 g.), or elixir of methylpentynol ('oblivon'), 15 to 30 minims (1 to 2 ml.).

MINOR DISTURBANCES OF CHILDHOOD

The most common minor gastro-intestinal symptoms in childhood are anorexia, constipation, abdominal pain and vomiting. Constipation is discussed in another article in this symposium (p. 409). When the others are not due to serious organic disease they are most often 'nervous' in origin. The effects of the emotions upon gastro-intestinal function are within the experience of everyone. The physician who would treat children must have some understanding of the psychology of childhood as well as its physiology and pathology.

NEGATIVISTIC ANOREXIA

A common problem is the pre-school child who refuses to eat to his parents' satisfaction, although he is rarely severely undernourished. His parents have already resorted to coaxing, bullying, bribing and other ludicrous subterfuges without success. The physician finds himself faced with a triumphant child and a defeated overanxious mother whose senses of humour and proportion have long since deserted her. An understanding of the child's emotional reactions to hunger and its gratification is essential to the doctor in this situation. Anna Freud (1956) has given an excellent account of this aspect of the child's psychological reactions, which will be briefly outlined here.

The intake of food satisfies the earliest need of the child, and the mother who feeds him is his first source of happiness. The child's first feelings of love for his mother are therefore promoted by the pleasure she brings in feeding him. Consequently, he tends to treat his mother as he does his food. If he feels jealousy or rage towards his mother he may react similarly towards his food. If his mother gives him the impression that he must eat to please her or that refusal of food amounts to rejection of her, an unhappy conflict is almost inevitable. The over-conscientious mother is apt to supervise her child's diet too rigidly. Meal-times may be so strictly defined that at times the child's hunger remains ungratified. Quantities may be so regularly controlled that the child sometimes finds himself forced to eat more than he wishes, at other times he is left still hungry. A reasonable measure of self-selection from suitable foodstuffs is often denied a child so that he is regularly made to eat what he does not like. It is not surprising that some children come to regard meal-times as unhappy and tiresome. In addition to satisfying the hunger instinct, the sensation of milk and food on the buccal mucosa gives the oral gratification which young children seek from food, from thumb-sucking and so forth. If such habits are forcibly forbidden a child may repress his desire for oral gratification and so for food. Aggressive tendencies also find satisfaction through biting and chewing of food. Freud (1956) suggests that feelings of guilt towards these desires may result in a dislike of solid foods. It is a common observation that the toddler enjoys handling and smearing his excreta. When he is taught cleanliness he often

passes through a short phase when he shows revulsion towards dirt of all kinds. He may then refuse to handle and eat foodstuffs which remind him by their consistency or colour of fæces. Finally, Freud also implicates other more subtle fantasies of a sexual nature in some disorders of appetite.

Some insight into such abnormal responses of a normal child towards eating will enable the physician to advise and reassure the mother. This must be preceded by an adequate physical examination of the child in the mother's presence. I once found myself on the side of a mother who had refused to accept her family doctor's reassurance concerning her anorexic daughter, who was shown to have a large hair-ball in her stomach. In negativistic anorexia the parents can be assured that the child is in no danger of starvation. They must adopt an unemotional attitude at meal-times. Coaxing and bullying are probably no more harmful than praise and bribery. Obvious conflicts between parents and child should be elucidated and eliminated *without apportioning blame*. When the child outgrows the normal negativistic phase of development, about the age of 5 years, the problem resolves itself. A few seriously maladjusted children require expert psychiatric care. Tonics and vitamins have no value.

RECURRENT ABDOMINAL PAIN

Many pathological states may cause a child to suffer recurrent abdominal pain. Among the more common may be listed recurring subacute appendicitis, partial intestinal obstruction from various developmental anomalies, infections in the urinary tract, and acute mesenteric adenitis complicating febrile infections of the upper respiratory tract due to the adenoviruses. Adequate examination of the patient during attacks will usually reveal clear evidence of their organic basis, although precise diagnosis may require special investigations, including laparotomy. The majority of children who suffer from recurrent pain in the abdomen, however, do not have demonstrable organic disease, although they are often a source of great anxiety to parents and doctor alike. In some the cause is obviously a nervous upset, and there are other signs of tension such as poor sleep, bad dreams, irritability, nail-biting and fidgets (Mac Keith and O'Neill, 1951). Diagnosis in these cases is dependent chiefly upon careful history-taking. Simple psychotherapy along the lines of explanation and reassurance is adequate treatment in the majority.

Probably the most common type of abdominal pain of a cyclical variety is that associated with '*the periodic syndrome*'. This should not be called 'acidosis' which is, in fact, usually not present. The cause of this syndrome is not known, but it is certainly not due to intolerance of fats as was often believed in the past. Between attacks these children can deal with dietary fat as well as anybody else. The typical sufferer is a thin, tense, intelligent but often introspective child. There is, however, no very convincing evidence that the condition is primarily due to psychological trauma. A family history of migraine is often obtained and, in fact, in some children the syndrome takes

the form of periodic migrainous headaches. Others have classical cyclical vomiting with true acidosis and air-hunger during attacks. In many, however, the attacks consist predominantly of abdominal pain, para-umbilical in distribution, often fairly severe, and at times associated with headache or vomiting or the passage of pale stools. Acetonuria is common but it does not necessarily indicate a state of acidosis. Between attacks the child is symptomless and energetic. An alternative name for the condition is 'abdominal migraine'. Some attacks are associated with fever. Emotional upsets seem to precipitate some attacks but not all. The attacks are best treated with glucose drinks and sedation. Parental overanxiety may be relieved by the doctor if he takes the time to explain the nature of the syndrome. The regular use of a small dose of phenobarbitone ($\frac{1}{2}$ grain [30 mg.] twice daily) is often remarkably effective in diminishing the frequency of attacks. I cannot, however, agree with Wallis (1956) that the periodic syndrome is usually a variant of epilepsy, unless that term is to be given a wider connotation than would be acceptable to most British physicians. The condition tends to disappear at puberty but it may be replaced by typical migraine.

VOMITING

Vomiting is extremely common in children of all ages but it becomes less frequent and less dangerous with age. It is a prominent symptom in a wide variety of organic diseases ranging from the acute abdominal emergencies to affections of systems far removed from the digestive tract, such as brain tumour, pertussis and diabetic coma. Although vomiting is only dangerous in itself when severe and persistent enough to cause serious loss of body fluids and electrolytes, its occurrence in a child should indicate the need for an adequate physical examination to exclude organic disease. Abdominal disease is likely to cause pain before vomiting. When vomiting is the sole presenting symptom serious organic disease is rare. In many such instances, the cause is an obvious dietetic indiscretion such as overeating of indigestible foods. The resultant vomiting is usually itself sufficient treatment, but the doctor should inquire about the ingestion of poisonous substances. Some children vomit more readily than others. There are those whose apparent ability to vomit at will is clearly an attention-seeking device. In others, vomiting occurs regularly on schooldays either before leaving home or soon after arrival at school. It is absent at the weekends and on holidays. Vomiting precipitated by anticipatory excitement as before a party, a long journey or a visit to the dentist will be familiar to many parents. None of these need be taken too seriously. A little intelligent inquiry will usually indicate the appropriate advice to the parents or the school authorities. In a few children, vomiting is only one of many indications of neurotic behaviour. There is usually a long-standing mismanagement of feeding and maladjustment between the child and the parents. The worst of these require treatment at a child guidance clinic.

Motion sickness, particularly on car journeys, seems to be more common

nowadays. This may be due to better springing on modern motor-cars, or to more motor-cars being in use, and perhaps to there having been a real increase in the incidence of neurotic behaviour in our children. Psychological influences, however, are not the only ones at work. A familial predisposition to travel sickness is often discernible. Ocular and labyrinthine mechanisms are also involved because car sickness is less if the child's attention is drawn to distant objects and away from objects within the car, whereas sea-sickness is minimized if the child is kept lying down. Other useful methods of treatment are to distract the child's attention from himself by singing, playing 'look out' games and so forth. Hypoglycæmia should be prevented with boiled sweets or barley sugar. Several drugs, given half-an-hour before starting out on the journey, are highly effective; e.g. hyoscine hydrobromide 1/250 grain (0.25 mg.), meclozine ('ancolan') 12.5 to 25 mg., dimenhydrinate ('dramamine') 25 to 50 mg.

Cyclical vomiting is one of the manifestations of the periodic syndrome which has already been discussed. Only the worst cases, in which vomiting is severe and persistent for two to three days, are associated with dehydration and an upset in the body's acid-base equilibrium. Loss of chloride in gastric contents may lead at first to a state of alkalosis but this is soon replaced by acidosis secondary to ketosis from starvation. Only then will there be seen the typical rapid, pauseless and acyanotic breathing of acidosis. It must again be stressed that acidosis is not present in the majority of patients although acetonuria is a constant finding. The appropriate treatment is a high intake of glucose combined with sedation. In the rare severe cases, dehydration and acidosis may require to be corrected with intravenous fluids. Acidosis can be corrected with 1/6 molar sodium lactate intravenously (40 to 60 ml. per kg. body weight). Subsequently the continuous infusion of 5 per cent glucose in half-strength physiological saline can be given until vomiting has stopped. In a few such cases, I have given promazine hydrochloride ('sparine'), 10 mg. thrice daily by injection and later by mouth, with dramatic cessation of vomiting. This drug need only be given for forty-eight to seventy-two hours. The blood pressure should be closely observed during its administration.

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CONSTIPATION AND ENCOPRESIS IN CHILDHOOD

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For centuries, doctors made great use of clysters (enemas) and aperients. Forty years ago the existence of 'intestinal auto-intoxication' was widely accepted. Then it was laid down that its only ill effects were discomfort on passage of hard stools. Mothers observed that children complained of 'tummy aches' which went after defæcation and some people still 'didn't feel well' until their bowels acted well. Does a distended bowel reflexly produce headaches? Or do the symptoms some people get arise solely because their parents (acting on what we were then teaching) taught them as children to expect such symptoms? Does the fear of constipation arise from the advertisements—or are they working on confused thoughts arising from concluding that the constipation, which is a common feature of acute illness, is the cause of pyrexia, rather than the sequel of low food intake?

'No stool, no school' was once a common morning threat. Are mothers ›day less obsessed than they were with the need for 'regularity'? In the hildren's outpatient department it seems less commonly complained of. erhaps the pædiatrician doesn't pay attention. Parents who see the chil-ren's psychiatrist are commonly very preoccupied by the problem: and dults commonly seem neurotically frustrated, anxious and depressed when onstipated and relieved when they defæcate well. Defæcation may give ensuous and sensual satisfaction but, without going into that, it seems ely that for some adults a state of moderate constipation is part of a asonable adjustment not to be hurriedly condemned or disturbed but lleviated by diet, massage and judicious use of their favourite aperients.

Constipation in children is a more rewarding study. The origins are more ecent, and children give away in their behaviour, play and talk the meaning ' symptom has for them. Normal children are at times very interested in mination and, if not 'shushed', will talk very revealingly.

DEVELOPMENT OF BOWEL CONTROL

nfancy many healthy breast-fed babies defæcate only once every two or ree days but, provided the bowel has not been insulted with aperients, ere is no retention from failure of normal mechanisms. Under-feeding

is certainly the commonest cause of infrequent small stools, and in the bottle-fed baby these tend to be hard (Evans and Mac Keith, 1951). Sometimes a large plump baby, contented and growing well, passes hard marbles at long intervals, often with apparent satisfaction. Perhaps the mechanism of absorption is unusually efficient.

In the early months of life, the response to the stimulus of rectal distension is immediate and unpremeditated. By being given a chance at suitable moments and praise from his mother, the child is conditioned to go on the pot and not in his napkin. By the end of the first year he usually obliges when sat on the pot after breakfast and often gives recognizable indications that he wants to go to stool. (There is a record of a three-months' old baby who squeaked once when he wanted to pass water and twice for 'jobbies'.) During the second year episodes of constipation are more commonly of emotional than of dietetic origin. By the end of the second year, if the child has been given an opportunity of learning without undue pressure, control has become established. (This is not to say that accidents may not occur. One of us sadly remembers that, at the age of 5 years, in 1913, waiting excitedly to be taken to see Farman and his biplane in flight, he had an 'accident' and was left at home.)

PSYCHOLOGICAL FACTORS IN CONSTIPATION

Mechanical and biochemical (toxæmia) approaches to the constipation problem have not solved all the questions, and today we follow up the psychological approach to see what it has to offer. We are all amateur psychiatrists and glad to hear what the specialist can tell us. The training of the baby seems to depend upon conditioning him to associate defæcation on the pot with approval from the mother. Discomfort or a fear of falling into the W.C. may preoccupy the child. And he may be puzzled because the mother regards his offering as 'bad' (especially if his natural curiosity leads him to finger it) and throws it away. But elimination easily gets mixed up with the child's conflicts about pleasing or displeasing, obeying or disobeying, controlling himself and his environment or being controlled. Retention easily gets associated with anger and a consequent refusal to be controlled. The relief of tension from defæcation gives it associations of pleasure, but defæcation may also be a primitive demonstration of fear.

In the toddler elimination seems to have implications of control and obedience, of anger, of pleasure and of fear, ideas which for an understanding mother come out clearly in the child's behaviour, play and talk. Constipation is common in 'stubborn' children in constant conflict with their mothers. The mother is often constipated herself and fusses the child, making elimination and bowel control a major domestic issue with moral overtones. The child resents being over-controlled and the impossibly high standard of obedience asked for; and 'holding on' results. The child's conflicts between pleasing and displeasing his mother, and controlling and being controlled,

may carry over into other spheres of his behaviour. He may have problems of starting, or of completing, what he says or thinks or does. Retention which was voluntary in the beginning may become an established and persisting habit when the original incident has faded.

Both adults and children may use the toilet when they are anxious or angry —the bowel action being either pleasurable and reassuring, or an aggressive outlet for their frustrated feelings.

In conversation, children sometimes clearly reveal fears about what they will 'lose' in the toilet; anxiety about the size and source of the fæces; and why 'clean' food goes in at one end and becomes 'dirt' at the other. A child may use a pot happily for a time and then suddenly refuse and even become openly afraid of it. Parents do not always realize that the child may have what is to him a very valid reason. (It might be a good thing if the word 'naughty' were abolished from the nursery. Too often it cloaks lack of thought by the adult.) Sometimes this is because the pot is cold or uncomfortable, or because he has been frightened by the noise in the W.C. Sometimes 'holding back' is a Declaration of Independence which the parents can be led to tolerate or even welcome as a stage in development of the child's personality. In a secure and understanding home where he is not fussed, or punished, either for refusing or because an accident has occurred, such fears will pass; where the parents are unduly anxious, or if there are other disturbances such as illness or a sudden separation from home, the fears may become accentuated and continue.

HIRSCHSPRUNG'S DISEASE AND SECONDARY MEGACOLON

A rare but treatable cause of chronic constipation is Hirschsprung's disease. The terminal part of the colon is 'aganglionic' and does not relax to allow passage of stools. The condition is present from birth. In infancy there may be constipation, diarrhœa, abdominal distension, anorexia and vomiting. Digital examination of the rectum may be followed by regular defæcation for a short period; aperients may act for a time. Eventually there is chronic constipation, with abdominal distension; the child is tired and looks ill. Soiling does not occur. On rectal examination no fæces are present. X-rays reveal the presence of the narrow aganglionic terminal segment.

Much commoner is secondary megacolon (Garrard and Richmond, 1952; Mac Keith, 1955). The story is of constipation, usually with soiling. The abdomen is distended, but the child's general health is usually good. On digital examination the rectum is full of fæces—there is no narrow terminal segment. The fæces are often soft, sometimes scyballous. The retention which leads to prolonged constipation and secondary megacolon is psychological in origin.

ENCOPRESIS

Today, parents not infrequently bring a child for soiling, yet the subject is seldom referred to in textbooks of pædiatrics. Perhaps there is a real

increase in incidence; more likely, parents feel freer to admit it and ask for help. It is almost worth asking about its existence as a routine question; certainly in the case of children brought with bed-wetting, for many mothers do not spontaneously divulge it. Whatever its origins, soiling may lead to serious social difficulties for the child. He may be teased, called 'Stinker' or ostracized by other children. It is an important symptom if only because a number of children with soiling develop serious anti-social behaviour: e.g. stealing, incendiarism (Vaughan and Cashmore, 1954).

An important point in the anamnesis is whether the child has soiled continuously from infancy or whether there was a period of normal bowel control. The child with continuous soiling comes usually from neglectful, degraded, disorganized homes, having had no training (Anthony, 1957). He usually responds well to simple training measures in which the health visitor's help may be very valuable. Encopresis which follows a period of bowel cleanliness is nearly always a symptom of a serious emotional disturbance between the child and his parents, and both will need special psychiatric help. The soiling often begins soon after the child starts school —commonly on the way home. The children are characteristically clean and attractive; boys are more commonly affected than girls. The psychological conflicts are essentially the same ambivalent conflicts which underlie constipation. If the retentive aspect is marked 'secondary megacolon' may develop.

The attitudes of the parents are extremely important, although at first glance the home may not appear disturbed. The mother is usually house-proud, may suffer from migraine, and is unduly intolerant of dirt, disorder and sometimes of smells. The father is commonly a nebulous character, who plays little part in the home; but these roles may be reversed. The parents punish the child, bribe him, then give up finally in disgust. They commonly say 'of all the things he could have chosen to do this upsets us the most'. Less commonly soiling may result from chronic anxiety and tension in the home which is expressed by the child in chronic diarrhœa.

TREATMENT

In the baby, constipation is most commonly the result of under-feeding—usually from going by the book (or tin) rather than noting whether the child is contented and growing. Hard stools from whatever cause may cause a fissure and the remembered pain lead to retention. Softer stools may follow giving more water or more food; the 'solid' foods seem more efficient than an increase of milk. Giving more food is simpler than a variation in sugar content based on divination by coproscopy.

Constipation is a good example of a condition in which drugs play only an auxiliary role. The situation needs full assessment before using drugs. Even when specific psychological treatment is not needed, it is worth remembering that for the child and often for his parents bowel function is heavily invested

with emotional feelings. Let the mother—and maybe the father—tell you how they feel about the symptom and its implications for health. Ask the child what he thinks about it—he may have overheard or misinterpreted some chance remark. Routine treatments are often more effective after such unburdenings by mother and child. Discover what is the atmosphere at home. Is too high a standard of obedience being demanded 'for the child's sake' or because of the people in the flat below or because parents 'don't want to spoil the child'?

Consider the child's regime. Is there potting without 'moral' pressure, both regularly and when the child asks for it? Can the child defæcate in comfort? After three years the child may be modest and want the lavatory door shut. Does the child get enough running about? Review the diet. Does he get plenty of fluids? A large drink of water before breakfast may help a great deal. Is the food adequate in amount? Or is this primarily a feeding problem? Is the diet lacking in residues?

Prunes and other fruits and high-residue foods are mild aperients. They are not to be used as a substitute for an increase in food when a baby is underfed, but they can be used for what they are, although, as with other aperients, their use can usually be avoided. Liquid paraffin is best not used for children. In babies it sometimes goes into the lungs and causes lipoid pneumonia which is serious; and it interferes with absorption of fat-soluble vitamins, and it may leak out of the anus. When used, aperients are best given in small daily doses and tapered off. The weekly dose of 'medicine' was a bad idea—it gave pain while acting and led to secondary constipation. Mild aperients include magnesium hydroxide and, for older children, small doses of 'senokot'. 'Manoxol' (dioctyl sodium sulphosuccinate) softens stools and is useful in doses of 1 or 2 ml. of a 1 per cent. solution once or twice daily. Bulk providers like cellulose and methylcellulose have not proved very useful in our experience, and there is great scope for educating parents not to give aperients for abdominal pain. They will often get away with this risky habit but it is unnecessary, and not infrequently death in appendicitis is the consequence of a dose of aperient medicine. Enemas are useful for the softening of scyballous masses and for this purpose 'manoxol' is again useful. Repeated enema treatment is unwise, as it is best to direct attention away from the process about which the child and parent are in disagreement. A mother who comes to you suggesting that her child needs enemas and other vigorous treatment may be quoting what someone has told her, but often really wants to control the child who has proved obstreperous; or else has an unreasonable fear of constipation.

Encopresis which has been continuous from infancy and is due to a failure to acquire normal bowel control will respond to simple bowel training. But if the child has been clean and then started to soil, psychological help must be given to the child and the parents. As they recover these children may pass through a stage of aggressive behaviour which makes the parents anxious

unless they are warned beforehand. Some of the mothers suddenly break off treatment, or become anxious and depressed, just as their children stop soiling. This is an interesting situation; it is as if they cannot accept the change in the child.

Untreated, most encopretic children will lose their symptoms by early adolescence or sooner, but this is at the expense of their personality development. They either become increasingly rigid and preoccupied with cleanliness and orderliness, or they develop severe anti-social interests such as fire-setting and stealing. A girl of ours ceased soiling recently after she was thrashed by her mother—three weeks later she started to steal. Appropriate psychiatric treatment combined with simple bowel training is likely to result in three-quarters of these children becoming lastingly symptom free within three to six months.

PREVENTION

Many nurses and mothers are still ten years behind the medical profession in placing less emphasis on rigid bowel training; we can do more to ensure that bowel training is done without excessive anxiety. Good general advice on infant feeding is a prophylactic against constipation in infancy, and advice on management will prevent 'holding back' being perpetuated.

In the toddler and schoolchild other factors may operate. Is he given an opportunity—regular but without 'moral' pressure—to have his bowels open in reasonable comfort? It is convenient for the child if he 'goes' before going off to school; the gastrocolic reflex works best at breakfast and a call later in the day may come when he is in class or busy. If a child goes away to school, for a holiday, or to hospital, those responsible should be sure he knows where the lavatories are. Emotional factors may come in as with the boy in hospital who said to his mother when she came after two weeks to take him home: 'I've kept it all for you!'

But why does the great British Public spend so much, outside the National Health Service, on 'medicines' for its bowels—millions a year on pills, tablets, and salts?

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MINOR ORTHOPÆDIC DISABILITIES IN CHILDHOOD

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A LARGE part of orthopædic practice in children is concerned with distinguishing what is normal, or a deviation from the normal that may correct itself in the course of natural development, from abnormalities that need active treatment. This is especially true of the lower limbs.

NORMAL GAIT AND STANCE

In the first year of life, the pad of fat in the sole of an infant's foot obscures the contour of the medial longitudinal arch, and gives an appearance of flat foot that may cause parental anxiety. Sometimes subcutaneous fat deposited on the outer side of the thighs and legs of an obese infant gives an appearance of bow legs. In both instances, the normal form of the underlying skeleton can be palpated and parents reassured.

When a child first stands with support his feet are spread apart and everted. Gradually he brings them closer together as his balance improves and his strength increases. The everted position of the feet during walking disappears, and by the end of the second year the back of the heel of the shoe should show the normal extra wear just to the outer side of the midline. A period of intoeing is very common in normal children until steady walking has been achieved. Morley (1957) has shown that flat feet, as indicated by standing footprints, are so common in children up to the age of five that they can probably be regarded as a normal feature in a child's stance during this period.

Parents often ask what is the best type of shoe for a child. As soon as he starts to walk a leather lace-up shoe with a heel is advisable. The sole should be straight on the inner side and broad enough with a sufficiently roomy toe-cap to accommodate the toes easily. The instep should be supported so that it does not bulge when the child stands. There is no good reason why x-rays should be needed to assess the correct fitting of a child's shoe, and repeated exposure to radiation may be harmful.

FLAT FEET

The vast majority of children who attend orthopædic clinics or outpatient departments with complaints of flat feet (fig. 1) are normal or will become so by the time they are seven or eight years old. A few are abnormal or deviate sufficiently far from the normal to warrant attention; in them, one or more of the following features may be present:—

(1) The child complains of pain in the foot or leg especially at the end of the day, after walking, or when standing in footwear with inadequate support.

(2) The foot, though of normal appearance when not bearing weight, rolls

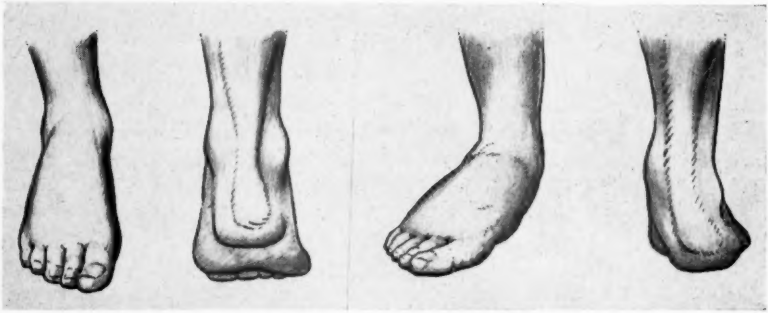

FIG. 1.—*Flat feet.*—On the left, when the foot is not weight-bearing there is no obvious abnormality and the arch is well constituted.
On the right, when weight-bearing the foot rolls over into eversion of the hindfoot and eversion and abduction of the forefoot.

into marked valgus on standing so that the navicular is prominent on the inner side of the foot viewed from behind.

(3) The arch of the foot is poorly restored when the child stands on tiptoe.

(4) The greatest wear on the heel of the shoe is on the inner side and the upper is distorted by the medial projection of the navicular.

If none of these symptoms or signs is present reassurance to the parents, with advice about good footwear, is all that is required. There is no need to insist that heavy shoes be worn at *all* times; a well-made sandal does no harm provided that it is not worn for too great a proportion of the day. Only if there is complaint of pain or easy fatigue when sandals or slippers are worn is continuous use of more adequate footwear advisable. If the heels of the shoes show extra wear on the inner side, an inside heel wedge of $\frac{3}{16}$ inch (5 mm.) should be applied to a normal shoe, or a shoe with a built-in inside raise should be advised. Distortion of the upper may be prevented by additional leather stiffening to support the instep. Some children, in spite of a severe flat foot, wear the heels of their shoes down on the *outer* side by their spontaneous efforts to maintain the arches of their feet when they are walking; such children may present with persistent intoeing. Raising the inner side of the heel in these cases generally makes the gait and the shoe wear worse still, so that weekly shoe repairs are needed. For them, and for heavy children and older children, a leather valgus insole is often more effective.

Foot exercises have no proven value in flat feet except to keep parents occupied and to make them feel that something is being done. In the relaxed standing position none of the muscles of the leg or foot is contracting; the

foot is 'resting on its ligaments' and it is excessive mobility in the ligaments that is the primary cause of most postural flat feet. In the light of these findings, it is difficult to see what part exercises can play. Since 96 per cent. of children cease to show flat feet by the time they are ten, irrespective of treatment, it seems likely that cures ascribed to exercise treatment would have occurred spontaneously.

A small number of children with flat feet are found to be suffering from a specific lesion, such as peroneal spastic flat foot, congenital short tendo Achillis, vertical talus or muscle weakness due to poliomyelitis or muscular dystrophy, that needs appropriate orthopædic treatment. The presence of limited or painful movements of the foot or ankle, or muscle weakness, differentiates these conditions from the common postural flat foot.

KNOCK-KNEE

In a survey of unselected normal children, Morley (1957) found that 22 per cent. of children aged 3 to 3½ years had a knock-knee of 2 inches (5 cm.) or more. Moreover, children without knock-knee of more than an inch (2.5 cm.) are in the minority at this age. Spontaneous improvement is the rule, so that only 1 to 2 per cent. of children aged 7 years and over have an equivalent amount of knock-knee.

A child with knock-knee is often brought to the doctor because he falls over easily or has an awkward gait in which he swings one leg round the other to avoid hitting his knees together. Sometimes there may be a complaint of pain in the legs or knees.

The amount of knock-knee is measured by the distance between the medial malleoli of the ankle with the inner surfaces of the knee touching and the patellæ facing forwards. The measurement can be made with the child sitting or standing; the first measurement gives an indication of the true bone and joint deformity and the second shows any additional effect of laxity of the medial ligaments of the knees. The size and weight of the child in relation to his age are worth noting since knock-knee is more common in large or heavy children, and this is not only because fat on the inner side of the thighs and knees tends to keep the limbs apart.

I am in complete agreement with Morley that no treatment is needed for knock-knee up to 3 inches (7.5 cm.) in a child under 7 years of age provided that there is no evidence of other deformity or of an underlying cause such as epiphysial injury or renal rickets. Personal observation of cases treated with various kinds of night splint or knock-knee iron have not convinced me that correction takes place any more rapidly than would have occurred spontaneously. Coincidental flat feet may need alterations to shoes as already outlined, and the improved gait that results may perhaps lessen the strain on the ligaments of the knee. Knock-knee that shows no sign of disappearing after the age of 9 presents a cosmetic deformity that deserves correction, especially in a girl. This is best achieved by stapling of the inner halves of the upper tibial epiphyses.

ADOLESCENT HALLUX VALGUS

A mild degree of hallux valgus secondary to varus of the first metatarsal is very common in girls over the age of 10, especially where there is a family history of hallux valgus (fig. 2). More than three-quarters of those who develop bunions in later life give a history dating back to childhood. Fortunately, few have symptoms at this age and need any treatment other than care in the choice of footwear and stockings to avoid pressure that may further increase the displacement of the great toe. They should be warned that they are very liable to develop bunions in later life and that discretion in the choice of shoes and stockings should continue when they are adults.

FIG. 2.—X-ray of the forefoot in a case of adolescent hallux valgus. The 1st metatarsal head is displaced medially and the gap between it and the second metatarsal head is much greater than normal. A small amount of new bone has been formed on the medial side of the first metatarsal head, but as yet there are no osteoarthritic changes in the joint.

Sometimes the first metatarsal head becomes displaced so far medially that symptoms develop in childhood or adolescence: there may be pain in the first metatarso-phalangeal joint, difficulty in fitting shoes, exostosis formation on the medial side of the first metatarsal head, irritation of the overlying skin or even a true bunion. A displacement osteotomy of the first metatarsal and reefing of the medial ligament of the metatarso-phalangeal joint will correct the varus of the metatarsal and the hallux valgus at the same time. Bonney and Macnab (1952) advise that such operations should not be done until growth has ceased in the basal epiphysis of the first metatarsal; if this proviso is observed good functional and cosmetic results can be achieved. I prefer an osteotomy through the neck of the first metatarsal with lateral and plantar displacement of the metatarsal head (fig. 3) at or after the age of 12.

ADOLESCENT HALLUX RIGIDUS

Although less common than hallux valgus, hallux rigidus also has a familial tendency. In many of those who develop it in childhood the shape of the foot is such that the first metatarsal is hyperextended (Jack, 1940) and the head of the metatarsal makes poor contact with the ground. Weight is borne on the great toe instead of on the first metatarsal head and excessive strain has to be taken by the first metatarso-phalangeal joint which soon becomes osteoarthritic. The symptoms are of pain and swelling in the region of the first metatarso-phalangeal joint. There is limitation of movement at

the joint and thickening of the dorsal medial and lateral aspects of the first metatarsal head, in contrast to the purely medial enlargement in hallux valgus.

A steel stiffening inserted between the layers of leather in the sole of the shoe beneath the first metatarso-phalangeal joint and a metatarsal rocker will often relieve symptoms—at any rate for a time. If this measure fails, operative treatment is indicated and for this condition I agree with Bonney and Macnab (1952) that arthrodesis of the joint is the best way of giving permanent relief.

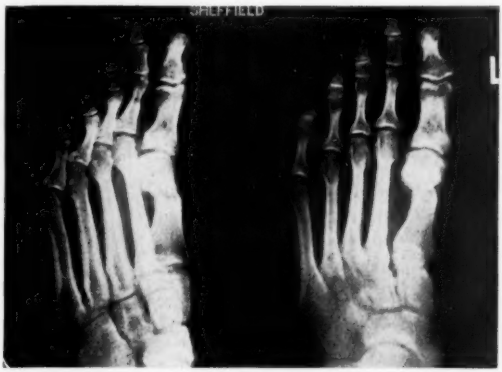

FIG. 3.—X-ray of adolescent hallux valgus after osteotomy of the first metatarsal neck. The first metatarsal head has been displaced laterally and plantar-wards. Slight shortening of the first metatarsal is inevitable, but this is compensated for by the plantar displacement of the metatarsal head so that it continues to bear weight normally. The lateral displacement of the metatarsal head automatically corrects the hallux valgus, and the position is maintained by reefing of the medial ligament.

CONGENITAL DEFORMITIES OF THE LESSER TOES

Minor congenital deformities of the lesser toes are very common, the most usual one that gives rise to parental anxiety being a flexed toe or one toe overlapping another. Many of them correct spontaneously or are unlikely to give trouble when shoes are worn; if the deformity is marked, a cradle of strips of strapping attached to the toes on each side and arranged to keep the affected toe straight can be tried, but must be continued for at least six months to be effective. A dorsally displaced fifth toe that overlaps the fourth is often a significant disability and may be bilateral. Mild degrees of deformity may respond to strapping but, if there is much displacement with redness or cornification due to shoe pressure, conservative measures will fail and a plastic operative correction must be made.

CLAW TOES

In true clawing of the toes, the toes are flexed at the interphalangeal joints and extended at the metatarso-phalangeal joints. The deformity is first noticed between the ages of 7 and 14. It arises as the result of weakness of the intrinsic muscles of the feet; in some there is an obvious neurological cause such as spina bifida or peroneal muscular atrophy; in others no certain cause can be discovered. The deformity of the toes causes the metatarsal heads to be depressed and, with growth, there develops a cavus

deformity of the feet. This adds to difficulties in shoe fitting, and the abnormal pressure on the heel and metatarsal heads produces painful callosities.

Passive stretching of the toes and a metatarsal bar may prevent deterioration and relieve symptoms in a mild case. Progressive deformity calls for surgical correction of the clawing of the toes before the deformities have become fixed. This can be obtained very satisfactorily by transplantation of the long flexor tendon in each lesser toe to the extensor expansion (Taylor, 1951)—a tedious but rewarding procedure.

FIG. 4.—*Popliteal cyst.* —The typical position is on the postero-medial aspect of the knee, just below the knee crease.

PAINFUL HEELS

Pain at the back of the heel is a common complaint in children between the ages of 6 and 12. The cause of the complaint varies. In some, an excessive prominence of the postero-superior angle of the os calcis (calcaneal exostosis) causes pain through pressure from the shoe. Removal of the stiff heel counter from the shoe usually gives relief, but occasionally the bony prominence must be removed surgically. In others, inflammation of the Achilles tendon or its bursa is the cause of pain, but in many cases there is no demonstrable abnormaiity. The pain subsides after a few weeks if the heel of the shoe is raised or a 'sorbo' rubber heel pad is put into the shoe.

OSTEOCHONDRITIS OF THE TIBIAL TUBERCLE (OSGOOD-SCHLATTER'S DISEASE)

This condition is characterized by pain and swelling in the region of the tibial tubercle in a child aged between 11 and 14. In some there is a history of trauma; in others the onset is insidious. The pain is increased by activity, particularly sports that involve running or jumping, and is relieved by rest. The tibial tubercle is enlarged and tender but the knee joint itself is normal. An x-ray shows fragmentation of the tibial apophysis.

Limitation of excessive activity, including sports, running, and long walks, for four to six months allows the lesion to subside.

POPLITEAL CYSTS

One-third of all cystic swellings in the popliteal fossa (fig. 4) occur in children, most of them in boys. The cyst is either a semimembranosus bursa arising from the bursa deep to and between the semimembranosus and the medial head of the gastrocnemius muscle or is a large ganglion. The only complaint is of the swelling itself; it is often large by the time it is noticed, and excision is recommended.

SYNOVITIS OF THE HIP JOINT

Acute synovitis of the hip is an inflammatory condition of the hip of short duration relieved by rest (Ferguson, 1957). The cause is not known though there is often a history of sore throat or respiratory illness ten days to two weeks before the onset of hip symptoms. A history of trauma is inconstant. The patient is typically a boy aged between 3 and 9 who develops pain in the *knee* and a limp. As the pain increases it becomes more localized to the thigh or groin. Some cases are so mild that the symptoms attract little attention or are regarded as 'growing pains' and subside in twenty-four hours. Others are so severe that they resemble acute septic arthritis.

Active and passive movements of the affected hip are limited in all directions; there is spasm of muscles controlling the hip and the thigh is held in flexion, internal rotation and adduction. The hip joint is tender to pressure in the groin and buttock. A slight pyrexia is common at the onset of symptoms. All investigations (Mantoux test, differential white cell count, x-rays) show normal findings except the erythrocyte sedimentation rate which may be slightly raised. The symptoms and signs always disappear with rest, with simple traction added in severer cases, and rarely persist more than a week. It is advisable to give a further week of rest without weight bearing before normal activity is resumed. Recurrence is very uncommon.

The importance of this condition lies in its similarity in its initial appearance to other more serious lesions of the hip such as Perthes' disease, tuberculosis, septic arthritis, rheumatic fever or rheumatoid arthritis. The negative investigations and the rapid recovery differentiate it from these diseases.

POSTURAL SCOLIOSIS

Lateral curvature of the spine is most often seen between the ages of 10 and 15, particularly in girls. There may be complaint of aching in the back, or parent, teacher or dressmaker may have noticed elevation of a shoulder, prominence of a hip or the spinal curvature itself. The most important decision to be made is whether the curvature is due to abnormal posture or is associated with structural deformity of the spine. The most significant finding is that a postural curve disappears when the child bends forward, and there is no unilateral prominence of the posterior parts of the ribs or of the transverse processes of the lumbar spine. An x-ray reveals no true bony deformity in a postural scoliosis. In a few cases, a postural scoliosis is due to unequal length of the lower limbs and they should be measured to find whether this is so. If present, correction of the difference in limb length by placing a book of appropriate size under the shorter limb will eliminate the scoliosis. Treatment should then be directed to correction or compensation for the limb inequality.

A true postural scoliosis never progresses and almost always disappears

spontaneously, unlike structural scoliosis which is liable to increase until growth has ceased in the spine, and may become a severe cosmetic disability. It is doubtful whether specific exercises to the spinal musculature are of any greater value in the treatment of postural scoliosis than simple discouragement of a bad postural habit and repeated injunctions to try to stand up straight. General exercises and simple gymnastics to improve muscle action are worth while, as children with postural scoliosis may show other postural disorders such as postural kyphosis (round shoulders) or relaxed abdomen.

FIG. 5.—Trigger thumb in a child aged 18 months, showing the position of fixed flexion.

POSTURAL KYPHOSIS

Postural kyphosis is the counterpart of postural scoliosis, with the deviation in the antero-posterior plane in the thoracic spine. The same type of child is affected and the deformity can be corrected actively by the child or passively by the examiner. Pain is not common and, if marked or persistent, warrants x-ray examination of the spine to exclude structural changes or bony disease. The management of postural kyphosis is the same as of postural scoliosis.

TRIGGER THUMB

Trigger thumb, or stenosing tendovaginitis of the flexor pollicis longus, in children is a congenital condition in which the tendon sheath is contracted and thickened at the level of the metacarpo-phalangeal joint. Symptoms seldom arise until after the first year of life. The child is often brought with a history of having put the thumb out of joint by some simple action such as putting on the lid of a tin. The distal phalanx is held in a position of fixed flexion (fig. 5) and attempts to extend the interphalangeal joint evoke pain. A few degrees of active and passive flexion from the fixed position are still present. There is a palpable tender thickening on the flexor surface of the thumb at the level of the metacarpo-phalangeal joint.

The only satisfactory treatment is incision of the flexor tendon sheath which gives immediate and permanent relief.

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NOCTURNAL ENURESIS

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'My doctor kept on telling me he'll grow out of it. Then I took him to the chemist, and he said to smack him every time he does it because it's only idleness'.—(Yorkshire parent, November 1957.)

THESE opposite views crystallize much of our professional thinking on the problem of bedwetting. The 'laissez faire' school is dimly thankful that time is on its side, because it doubts whether anything else can help. It is patiently sceptical of all the new claims of enthusiasts. What else can the doctor do but play for time? On the other hand, there are all the single-eyed dogmatists who over-simplify both causation and treatment, whether they see enuresis as a tidy unity of toilet mismanagement, or of psychiatric stresses, or drug-sensitive bladder physiology. No other problem so humbles our self-esteem by its exasperating mundaneness, by the menace of numbers, and by the length of time its victims haunt us. How bitterly it refutes the blithe optimism that to travel hopefully is better than to arrive.

We may reckon as enuretic any child who habitually wets the bed after the age of 3 years, excluding children with occasional accidents up to the age of 5. The view taken in this article is that lifelong bedwetting is due to abnormal delay in the maturing of the natural reflex control of the bladder. The strong genetic trend in enuresis supports, though it does not explain, this view. Various secondary causes such as psychological upheaval, faulty habit training, and some of the few organic malformations may act as trigger factors and provoke the insecure, immature reflex defences. Enuresis which arises after normal control has been established is a different problem.

NORMAL PHYSIOLOGICAL DEVELOPMENT

In the average child, even from birth, the bladder is continent for hours of time and ounces of distension. In later infancy many babies, including many mentally defective babies, have natural control of the bladder during long hours of sleep.

Control while awake does not necessarily mature parallel with control in sleep. Some children with vexatious daytime urgency are dry at night. When voluntary control by day is becoming established, some toddlers display restlessness during sleep as the bladder fills, as if half-aware of trying to prevent its emptying. Further progress is marked by the ability to withstand increasing bladder distension, and for a longer period, so that most pre-school children need lifting only at the parents' bedtime or not at all. Yet under the discomfort of a blocked nasal airway during a cold, perhaps aggravated by fever and restlessness, some normal children may

wet the bed as a symptomatic exception. This should still be regarded as within normal limits up to 5 years of age. Parents need to appreciate that the bladder is most severely tested when it is fullest: during the restless half-sleep just before waking-up time.

THE NATURAL HISTORY OF BEDWETTING

The picture is confused by our inveterate habit of overemphasizing one facet of truth which has impressed us. Moreover, we may be misled by processes of selection of patients before they reach us. Thus, one pædiatrician sees mostly lifelong bedwetters and relatively few who have lapsed after once acquiring night-control, whereas a psychiatrist colleague sees lapsed cases in the majority. Not all parents even consult their family doctor. Many regard bedwetting as one of the things they have to live with, like damp walls and taxation. There is a characteristic cluelessness about the parents of many enuretics, displayed in offering diuretic nightcaps, neglecting to lift the child at 10 p.m., letting him lie abed till 8 a.m. on school days, and having him share a double bed when there is a single bed available. Defeatism is another common factor, for which perhaps we must share blame with parents. Thus, they often neglect to report results of therapeutic trials or to return for replenishment of drugs; and they announce in front of the child, 'He's NO BETTER, doctor. He's AS BAD AS EVER'.

THE LIFELONG BEDWETTER

This is the norm of our practice. He usually has parental or family precedent to make his condition respectable. The longer it has continued, the more despondent the parents become, but the nearer they are to unexpected cure. The child himself may be blithely unconcerned unless he has been unjustly punished and shamed. His feelings are touched more keenly if he is kept back from camp or holiday because of his weakness.

A roughly calibrated 1 pound (0.45 kg.) jam jar gives a visual estimate of how much strain the kidneys impose on the bladder sphincters, if parents will measure in it the output at bedtime, again at 10 p.m. (often several ounces if he has not already wet the bed), and again on being wakened early in the morning if he is still dry. The early night-flow from the kidneys is important in volume in many children. Parents and child benefit by learning how the kidneys are continually distending the bladder, and how, as the bladder wall becomes stretched, it contracts more tightly until reflex emptying is inevitable.

When normal control begins to supervene, the 'door-spring' can gradually withstand a more forceful push. The child will be found more often dry at the parents' bedtime, unless there has been play after lights-out. And some successes occur in the morning also. Then in hot summer weather a whole succession of dry nights will become the rule, although the next winter with its polyuria may again disappoint. At last final control is reached, broken only by an occasional lapse after a physically exhausting late evening.

Among the very large number of enuretic children it is not easy to select those who require detailed urological study. At the simplest level, examination of the urine will be desirable for evidence of chronic infection, diabetes mellitus or renal insufficiency, and for an irritant highly acid reaction. The few children with diurnal urgency or incontinence, or persistently infected urine, may call for measurement of residual urine, cystoscopy, pyelography or voiding cysto-urethrography. Merely nocturnal cases may need urological examination if they have never had a dry night by 5 years. If by 9 years of age children have ever gone dry for a whole week, then an intravenous pyelogram and voiding cystogram may suffice; but otherwise a more detailed study may be called for.

THE LAPSED BEDWETTER

The lapsed bedwetter, who loses control after a few years of being dry at night, poses different diagnostic problems. Involuntary control having been established, some disruptive factor may fairly be postulated. It is unlikely to be neurological degeneration or urinary-tract malformation. Rarely, the onset of diabetes mellitus or the polyuria of chronic renal failure may present by enuresis. It is in this group that psychological disturbance may most profitably be sought for, although a blocked nasal airway is sometimes the trigger point. Emotional causes may be insecurity in the home, real or imaginary, or fear of incompetence at school. Simple emotional exhaustion may perhaps lower the defences in the same way as physical exhaustion. It must not be forgotten, as Hubble (1950) has pointed out, that the symptom itself is the cause of a psychological disturbance more important than any which may have produced it. In some cases the psychiatric illness is very complex and needs expert unravelling (Winnicott, 1953), but it would be impracticable to refer bedwetters as a routine to the psychiatrists, whose work would be swamped by numbers. It would be ideal if family practitioners and pædiatricians could review regularly with their psychiatrist colleagues the selection of enuretics for consultation.

TREATMENT

Pitfalls for enthusiasm.—Some general warnings should precede discussion of a plan of treatment. And the history of 4000 years of vain prescribing may give us pause, from the alcoholic recipe of the Papyrus Ebers to the West African method of attaching a large frog to the child's waist and the West of England cure by the ingestion of a fat mouse skinned and cooked in a pie (Glicklich, 1951; Hodge and Hutchings, 1952).

Controlled trials.—Clinical trials of new remedies must be run with controls, or false claims to success will gain currency. Thus two articles side by side in a journal reported on a new antispasmodic drug: the one found many enuretics relieved, the other used dummy controls and found the controls relieved to a similar extent: i.e. improvement was independent of the drug.

Post or propter hoc?—This sceptical question must be posed with special insistence in enuresis, since

(a) Time is on our side, and a few months spent trying a remedy may merely have allowed spontaneous maturation to occur;

(b) Cure may be due to an irrelevant consideration: for instance, the boy (6 years) who so hated stripping for medical examination that he resolved not to give occasion for a second pædiatric consultation, and the boy (10 years) who so abhorred the gadgetry of the electric alarm pad on his perineum that he at once became dry without need of it.

Duration of drug action.—Evaluation of drug control must allow for the duration of action of a bedtime dose. Thus, it is unfair to expect a drug to be still in effective control eleven hours after ingestion, if its pharmacological action is limited to six hours. This may explain poor results with simple dexamphetamine tablets and pituitrin snuff. A delayed-absorption presentation of most drugs would thus be essential.

It is of no use to give treatment which ignores the physiological capacity of the patient. For instance, it is impossible to establish a good habit before a young child's reflexes are neurologically ripe. It is useless for parents to weary themselves by lifting a child many times throughout the night, in the hope that his bladder thereby will learn to waken him for voluntary control. Parents must understand that a box of capsules is not a once-for-all cure, but a palliative and interim reinforcement to immature physiological mechanisms until such time as they mature.

Discussion must be kept off the moral plane. No adult would wish to be held morally responsible for all that may transpire while he is sound asleep. But the words and tones of voice used in front of the child often imply that he could and should have succeeded better than he has.

TREATMENT PLAN FOR UNCOMPLICATED LIFELONG ENURESIS

(i) Take the child as well as parents into confidence, with a simple physiological explanation of bladder control, and get parents for a few weeks to measure the bladder capacity and night output in the way already described. Abolish indignation, chiding and punishments. Encourage the child to be unobtrusively self-reliant in helping with daily laundering of bed-linen.

(ii) Forbid diuretic beverages in the evening, but allow milk, water and fruit drinks.

(iii) Correct any excessive urinary acidity by alkaline mixtures.

(iv) Correct nose obstruction, if present, by decongestive drops at night.

(v) Avoid a sagging mattress which makes too cosy a nest for the sleeper.

(vi) There may be some value for the older child in voluntary practice of bladder capacity control by day, waiting some hours before micturition.

(vii) Have the child wakened to empty the bladder completely two hours after going to sleep, or at the parents' bedtime if he can safely be left until then. Have him lifted again when the first adult wakens in the morning.

Opportunities are often missed by fathers working early shifts. Ideally the child's bladder should be relieved before the ultimate distension is reached in the confusion of half-waking. The older child can use his own alarm clock at 6 a.m. or earlier, and return to sleep.

(viii) To bridge the long interval from 10 p.m. to 6 a.m., if the above measures have not brought success, the next treatment is to give one of the delayed-absorption preparations of dexamphetamine, 10 mg. or 15 mg., at 10 p.m., washed down with 2 ounces (60 ml.) of milk. If in three weeks it has failed to achieve a notable success, it should be withdrawn and tried again after six months. For children who are habitually wet by 10 p.m., the same drug may be tried at 7 p.m. instead of 10 p.m.; but given at this early hour it is more liable to cause wakefulness.

(ix) For the older intractable bedwetter the electric alarm bell circuit, actuated by damping the special conductor pad applied to the perineum, may establish a conditioned reflex of secure control during sleep. The effect of this device upon the child and the household is not a mere simple one of Pavlovian physiology. And preferably it should only be recommended after judicious urological examination.

(x) Support morale and never admit defeat. A grammar school sixth former, who had been my sorrow till he left school, hailed me five years later to say all had come right when he was 19 years old.

SUMMARY

Nocturnal enuresis is in general a self-limited disorder, attributable to delay in the maturing of physiological reflex bladder control.

It is aggravated or prolonged by conditions causing physical or emotional unrest, by defects of management, and occasionally by organic urinary tract disease.

Enuresis which recurs after the achievement of normal control suggests a search for psychological causes.

Reproach of the child and defeatism are to be avoided in the protracted handling of each case.

Treatment calls for understanding of bladder physiology and cooperation by parents and child in a routine of management and, if necessary, drug treatment, designed to relieve pressure on the involuntary bladder control mechanisms until they reach maturity.

Reasons are given why any special treatment needs to be critically evaluated.

I am indebted to the advice of Professor R. S. Illingworth and Mr. R. B. Zachary in the preparation of this study.

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THE STAMMERING CHILD

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Considerable progress has been made in our knowledge of the mechanism of stammering and in the efficacy of its treatment since it was last dealt with in *The Practitioner* (Paterson, 1948).

The child with this complaint is likely to be brought to the family doctor in the first instance. The parents may be worried in the first few years of his life because of his lack of fluency. When learning to speak, normal children often hesitate or repeat syllables as in 'Mamma', 'Dadda', 'Lulu'. In certain children, however, especially those who are nervous, these hesitations and repetitions are more marked. If the child is not treated, in many cases there is a marked deterioration and this often follows some crisis in the child's life. He may then develop into a frightened, sullen, unsociable individual. Cut off from his fellows he is unable to develop his natural talents but remains a frustrated and unhappy individual. It is with the aim of avoiding this situation that the practitioner approaches the case.

EXAMINATION OF THE PATIENT

Attention is paid to the occurrence of speech defects in the family. There is often a hereditary predisposition. Studies of twins have indicated that in 9 out of 10 pairs of uniovular twins, one of whom stammered, the second twin was also affected; but in only two out of 30 pairs of binovular twins, where one stammered, did the other stammer also (Nelson *et al.*, 1945).

With regard to the personal history, a note should be made of whether the birth was normal or instrumental. Is there a history of head injury, whooping-cough or any wasting disease? Did he pass the milestones of speaking and reading at the usual ages, and was there any lack of fluency? In some parts of the world learning ability in the sphere of speech has been impaired by lack of aneurine in the diet, and fluency has been improved by a daily supplement of that vitamin (Hale, 1951). The speech defect may have been passed on to the patient through the hasty or indistinct speech of some other member of his household.

On the psychological side he should be tested for mental backwardness. He may have brighter brothers or sisters with whom he tries in vain to keep up. The presence in the home of an anxious, overemotional parent or relative may be significant. Someone may have been in the habit of shouting at him or ridiculing him. The history will show whether the child has already changed over from being a so-called primary stammerer to a secondary one. In the former condition the patient simply shows in exaggerated form the hesitancy and the tendency to repeat syllables or words, which normally occurs in the first years during which the child is learning

to speak. In this situation the child is unselfconscious and unworried and thinks of himself as being like anyone else. Later, however, the child may develop a fear of the speaker-audience situation. He makes voluntary and conscious efforts to control his speech which only result in tonic spasms of the muscles of the lips, the larynx, the diaphragm or other respiratory muscles. His speech may be entirely held up and he may grimace or stamp his foot. He becomes bitterly ashamed of his disability and unsuccessfully tries to cover it up. In addition, one inquires about the patient's chief interests in life, his successes and failures, and his relation to his family, schoolfellows and teachers.

In the physical examination, attention is paid to the patient's mouth and nose, his hearing and his sight, and the central nervous system is examined thoroughly. Is there evidence of crossed laterality: that is, whether one and the same side is dominant for hands, feet, sight and hearing, and has there been previously a changeover in handedness? One looks for clumsiness or jerky movements and a general lack of sense of rhythm.

THE PATHOLOGY OF STAMMERING

In recent years particular attention has been paid to the patient's perception of his own stammering and the effect of this in maintaining the stammer.

An electrical engineer (Lee, 1950) has succeeded in creating an artificial stammer by causing the subject to speak into a specially designed apparatus, which consists of a tape-recorder and an instrument which reproduces the recorded voice about a quarter of a second after the subject has spoken, the subject hearing this voice through earphones. The recorded voice is sufficiently loud to prevent the subject hearing his own voice. The delayed sound of his own voice causes him to repeat syllables like a stutterer. If asked to count backwards, he may say '10, 9, 8, 8, 7', etc.

A further valuable contribution to the study of the mechanism of stammering has been made by Cherry and Sayers of the Imperial College, London, working in collaboration with Mrs. Marland of St. Mary's Hospital, London (Cherry *et al.*, 1956). Being influenced by Lee's work, they went on the assumption that the production of speech involved a closed-cycle feed-back action, by which means a speaker continually monitors and checks his own voice production. Their hypothesis with regard to stammering is thus couched in the language of an electrical engineer. They emphasize that in stammering the patient's perceptions of his own faulty speech constitute an important factor in maintaining the stammer. Patients tend to become fluent in circumstances where the sensory arc by which they monitor their speech is prevented from functioning in its usual manner. For instance, if a child reads while wearing headphones from which a noise is emitted so that it prevents him hearing his own voice, he becomes more fluent. Again, they have found that the hearing of bone-conducted sound has more influence on the immediately ensuing speech than air-conducted sounds. If therefore a child whispers he hears his voice only by air-conduction and the hearing of these whispered words does not adversely influence the subsequent speech. Children may also lose their stammer if they read simultaneously with the therapist (in this connexion called the control).

This technique has the effect of partially transferring the subject's perceptions away from his own speech sounds to those of the control. An interesting finding is that if the control switches over in time to reading a different text the stammerer still maintains his fluency. It is as if the patient requires merely the sound of another human voice to distract his attention from the sound of his own imperfect speech. The exact cause of this phenomenon is still doubtful.

Arising from this work two techniques have been used with children. In the first the therapist reads a phrase and then pauses long enough for the child to repeat the phrase after him. This is called 'phrase copying'. Akin to this method is that of so-called shadowing, in which the child repeats what the therapist says when reading, and the child follows only one phrase or so behind the control, there being in this case no pauses. Children can be taught to learn to attend to the control's voice in both these methods, young children finding phrase copying easier and older children the shadowing method. Children are given gramophone records and practise the exercise for half-an-hour a day. It is certainly an impressive experience to hear a gramophone record in which the therapist is reciting a fairy story in a clear rhythmical voice and to hear the gruff voice of a six-year-old child shadowing her in a spell-bound manner and with perfect fluency. The phenomenon of shadowing is reminiscent of an interpreter at an international congress who is as it were shadowing a speaker although in this case the shadowing is in a different language. The fluency achieved with these and certain accessory techniques is in time transferred to speaking under everyday circumstances. Mrs. Marland and her colleagues, however, make use of other methods as well. In particular, attention is paid to the psychological aspects of the situation and contact is made with parents or school as the case may require.

TREATMENT OF STAMMERING

The most important point to emphasize to the relatives is that the treatment may be as long as two years or more. With perseverance, probably about 80 per cent. of sufferers will have achieved a good degree of fluency by the end of that period (Brook, 1957). If the child is first seen when he is in the primary stage, then the treatment is for the most part indirect. Contact is made with the child's parents. They are encouraged not to refer to the child's stammer. They try to reduce tension in the home and they themselves attempt to speak clearly and slowly. Nowadays the child meets with more understanding in the school. His teacher has already been taught about speech defects when he was a student. He makes friends with the child. One day the child may be sent on an errand and the teacher then tells the other pupils how they, too, can help. Sometimes arrangements are made if he becomes easily overtired to lie down and rest for half-an-hour in the afternoon. If the child's stammer, however, should be of moderate degree, even in the primary stage he should be given the advantage of attending a speech clinic.

THE ROLE OF THE PSYCHIATRIC CLINIC

In planning the treatment of a stammering child the practitioner himself plays a significant part in summing up the relative importance of different causative factors. It is he who knows the child and his home background. He will probably be well advised to refer the child in the first instance to a child guidance clinic, where not only is a full psychiatric and physical examination made but the child is examined by the clinical psychologist and his intelligence is tested. The social worker can visit the home if necessary and contact the schoolteacher. Often a clinical discussion takes place on the case, to which the teacher may be invited.

Sheehan (1954) has discussed the relationship between the psychiatrist and the speech therapist in the treatment of stammering. In neurotic illness generally, the tendency has been not to attack a psychosomatic symptom directly but to investigate the emotional problems behind it. This point of view, however, does not hold in the case of stammering. Sheehan has had personal experience of the pioneer work done by van Riper in the different techniques used to break the vicious circle from which the stammerer suffers and so to free his speech. He concludes that it would be foolish to ignore the excellent results which van Riper's methods have achieved. The two approaches, that of the psychiatrist and that of the speech therapist, are in fact complementary. The loosening of the patient's speech enables him to benefit from the subsequent psychotherapy. His personality during treatment often undergoes two changes. In the first he gradually comes to accept that he is a stammerer instead of trying to cover it up. From being a sullen, or even pompous, individual he develops a sense of humour and a more devil-may-care attitude towards the various exercises which he is asked to carry out. In the latter part of the treatment he has to accept the fact that he has achieved a degree of fluency which will enable him to live a more ordinary life.

An important part of treatment consists in teaching the patient various methods of relaxation and even light hypnosis. Some speech therapists have become very proficient in this but others prefer to leave this type of therapy to the psychiatrist. Sheehan emphasizes that various abreactive techniques have been very effective in removing symptoms of anxiety in neurotic stammerers, and we have found this at the West London Hospital.

RELAXATION TREATMENT

As already mentioned, anxiety intensifies stammering. The older child who can be quite fluent when talking to a pet animal, may be totally held up when addressing his teacher or when answering a telephone call. For this reason much attention has been paid to the technique of relaxation in recent years. In Germany great success has been achieved with a system of relaxation called 'autogene training', in which the patient is given exact instructions with regard to relaxing his muscles and acquiring a calm state of mind.

This technique is used in anxiety states of all kinds. Similar techniques have been employed by Jacobson (1948) in America and Garmany (1953) in England.

Miss Kingdon Ward (1941, and personal communication) at the West London Hospital has perfected particular methods of relaxation in relation to stammering. The object is to increase the patient's awareness of the various degrees of tension and relaxation in the different muscles. The patient is taught to contract strongly the various muscles of his body and then to let them relax very gradually. He thus teaches himself to recognize the extreme degree of relaxation of which he is capable. This technique is used at the beginning of treatment, and is called reactive relaxation, as it follows immediately after voluntary contraction. The patient is then taught to relax certain muscles such as those of the scalp, face, tongue and throat, as they are named by the therapist. At the same time, he thinks of the words 'loosen', and 'let go', or 'slacken'. A slight pause is made after naming each part and before passing on to another (discriminative relaxation).

During such treatment, the patient often becomes drowsy and starts to day-dream, imagining himself in some situation which has caused him to relax, as for example when reclining on some sunlit beach. In this state he is particularly suggestible. Brook (1957) has given a good account of the concrete suggestions that may be given to the patient, with sentences like the following: 'A change is taking place in my attitude towards speaking. I am calm and my speech is easy. This picture of ease and stillness often comes to me during the day so that my speech flows more easily. I look out for this feeling every time I talk. I feel calm and confident and I enjoy this effortless speech'.

OTHER TECHNIQUES FOR IMPROVING FLUENCY

There are several other methods which the therapist uses in order to break the vicious circle which is causing the stammer to continue. The patient has fallen into the habit of expecting to block under certain circumstances. He has come to fear certain situations, as when he is faced with the letter 'K' or when encountering an unstressed syllable like the 'to' in 'together'. He may thus try to avoid using words which contain the feared letter and attempts to cover up. Treatment with the following techniques tends to break up this habit and behaviour pattern. They supplement the relaxation technique just described.

Effortless speech.—In this method the patient sits in a relaxed attitude and speaks rather like a drowsy man. The consonants are spoken in a blunted manner and the speech is slower than usual. As the patient practises, he experiences kinæsthetic and auditory images which are different from those that were present during blocking. In the course of practice, the patient acts out common situations which in the past have caused blocking, and continues to use drowsy, effortless speech while so doing. When therefore he is next faced with such a situation, he has in his mind a picture of himself as

speaking in a more relaxed manner instead of having impressions of himself as being held up and blocking.

Voluntary stammering.—An important development in the last generation has been the introduction of voluntary stammering in one form or another (Travis, 1931; Bryngelson, 1939; van Riper, 1947; Ainsworth, 1948). Many stammerers block when they have to face words which start with two or three consonants like 'strength'. The patient is therefore taught to pronounce 'str' and then to pause before going on to say 'ength'. This method is widely used. The patient requires considerable practice, before he becomes proficient. He learns to make sentences in which such words occur and he varies the length of the pause between the initial consonants and the rest of the word. The introduction of voluntary stammering to interfere with reflex stammering has taken the form of inducing the patient to repeat voluntarily stressed syllables like 'geth' in the word 'together'. He thus says 'to geth geth er', which tends to prevent the patient blocking altogether before the word. Again, the child may be taught to stop altogether whenever he chooses and at any part of a sentence. Patients are also taught to read in a rhythmical fashion.

Many therapists attempt to wean the stammerer from his desperate attempts to hide his disability by inducing him to stammer voluntarily and purposefully in public (fake stammering). These older children are actually given definite assignments to carry out. Families and schoolfellows are told that the patient will be asked to stammer on purpose as part of his treatment. This makes the patient much less shy and he feels that his speech is coming more under his control. Whereas previously he had been oversensitive, he now becomes nonchalant. As the child grows up he may even join a free speakers society where there are debates, brains trusts, concerts and so on. In this way patients can talk to each other about painful experiences in the past, which they can now laugh off. By this time the stammerer has travelled a long way from the days when he was a frightened, sullen child, who was perhaps shouted at by impatient relatives or teased and mimicked by his schoolfellows.

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TICS IN CHILDHOOD

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BOSWELL wrote of Samuel Johnson's tics that they were 'convulsive starts, and odd gesticulations, which tended to excite at once surprise and ridicule'. Another shrewd observer and friend, Sir Joshua Reynolds, considered them to be habits, but Boswell maintained that they were 'of the nature of that distemper called St. Vitus's dance'. Similar differences of opinion persist to this day, even in the medical profession. Thus, among 105 children referred to a school cardiac clinic because of suspected chorea, this diagnosis was confirmed in 19: most of the remainder suffered from some form of tic (Apley and Perry, 1954).

DIAGNOSIS

A tic can be reproduced deliberately by the 'tiquer', or imitated, as it sometimes is, by candid school friends. This is made possible because a tic is a movement performed by a group of muscles which *normally* act together. The movement becomes a tic when it is involuntary and purposeless. Tics occur abruptly, are brief, and are repeated at irregular intervals. Once started they cannot be interrupted. They affect one group, or a small number of groups of muscles, repetitively. They may become more marked under the influence of stress, and diminish if the child's attention is distracted. They do not occur during sleep. The performance of other movements remains unaffected, and there is no general alteration in muscle tone. By these features tics are distinguished from disorders such as chorea, athetosis, and torsion spasm, and from habits like thumbsucking. (I avoid the use of the term 'habit spasm' as a synonym of 'tic'. A tic is not strictly speaking a habit or a spasm, and the implication of voluntary control is misleading.)

For practical purposes the differential diagnosis lies between tics and Sydenham's chorea. In *chorea* the movements tend to be more widespread; there is not the constant repetition of the same movement; and the face is less often involved. Hypotonia and incoordination can be demonstrated. There may be evidence of an acute rheumatic infection. The fairly common condition of *general motor unrest* also deserves mention. Some children are described as 'always on the go'. They are 'hyperkinetic', and have not acquired a sense of economy of movement. This type of overactivity is recognized by the non-localization of the movements. There is no set pattern; all movements are affected. The history dates back to early infancy, and when the doctor is asked to see them the children are usually still in the pre-school age.

Finally, it is as essential for treatment as for diagnosis to affirm that a tic is a sign of underlying disorder, not a disease in itself.

VARIETIES OF TIC

An inventory would be pointless. The frequency of occurrence diminishes from above downwards, the face and head being much the most often affected. Among the tics most commonly encountered in practice are blinking, winking, wrinkling the forehead, twitching the nose, tossing the head, sniffing, clearing the throat, sighing, shrugging the shoulder, twisting the trunk, jerking the arm or hand, picking or plucking with the fingers.

In adults tics tend to be single and localized; in children they are more often multiple and migratory.

NATURAL HISTORY

Boys are more commonly affected than girls, and first-born children rather more than other children. The notion that, on the whole the intelligence of tiquers is below the average is not supported by statistical inquiries. Tics rarely develop before school age. There is a peak in incidence at 7 years of age, and another in the pre-pubertal years. After the onset of the tics the intervals between them tend to grow shorter over a period of weeks or months. After a variable period of weeks, months or years the intervals tend to lengthen again until the tics eventually disappear. But even when the disturbance appears to have been outgrown it may recur with some fresh stress.

It is not generally appreciated that in a considerable proportion of cases tics, particularly severe ones, persist for many years, sometimes into adult life.

BACKGROUND AND CAUSES

We tend to remember the cases in which tics were preceded by true chorea, or associated with a dramatic illness like encephalitis; but such examples are very uncommon. In the vast majority of cases no organic disorder is demonstrable, and there is no pathological anatomy to be described.

Precipitating factors.—The attempt to discover an immediate precipitating cause is always worth while, though not often successful. I have seen winking persist after conjunctivitis or trauma to an eye; shoulder shrugging after the irritation of a frayed collar; and drawing down of the mouth after a dramatic episode associated with an intense feeling of disgust. In such instances a movement originating as a purposeful act has been detached from its context and become meaningless. But, in this as in similar disorders, an obvious precipitating cause is only one of a series of influences which in the end bring about changes in the patient's behaviour. In many tiquers there is clear evidence of emotional and behaviour disorders before the tic developed. Predisposition is all-important. If we exclude the rare organic causes, it seems true to say that in secure, well-adjusted children tics do not develop and persist. There is some underlying tension, though it may be deeply hidden.

A tic, then, is the motor expression of psychological tension, occurring in certain predisposed individuals.

The family.—There are tiquer families, in which several members are affected. The clinical impression that a high proportion of the parents of

tiquers themselves suffer from tics has been confirmed in a careful study by Zausmer (1954). He found also that an unduly high proportion of the parents show signs of pathological anxiety or even of psychoneurosis. The practitioner who knows his families well will observe frequent and marked disturbances of the child-parent relationship.

The child.—Tiquers tend to be thin, although I have seen an occasional case with gross obesity and an insatiable craving for food. A thorough clinical examination must be carried out in all cases, even though an indisputable physical cause to account for the tic is rarely found. Errors of refraction, carious teeth, worms, postural deformities and the like may be found and treated; but their correction is unlikely to 'cure' the tic.

On the other hand, a carefully taken history is very likely to reveal a significant underlying emotional disturbance. Characteristic *personality traits* will have been noticed in many tiquers long before the onset of the tic. Often they are unduly sensitive or 'highly strung', diffident and apprehensive, irritable, excitable and restless. Evidence of *tension and anxiety* is common. The practitioner who inquires in careful detail about disturbances of sleep (including bad dreams and nightmares), temper tantrums and aggressive behaviour, undue fears, nail-biting and bed-wetting, inattention and lack of concentration, will find considerable disturbances of this sort in nearly all tiquers. It is, of course, useless to ask the mother such questions as: 'Is he all right at school?' or 'Does he worry?'. If he thinks it worth while the doctor must discuss, in close detail, the child's day-to-day affairs. In the background of the child's home and school he must know the reactions to play and to work, to pleasures and to duties.

All this cannot be done in a hurry. If the condition requires treatment, at least two, and perhaps more, consultations will be necessary. Often it is extremely helpful to get the mother to talk without the child being present, and sometimes a word with the schoolteacher is helpful.

TREATMENT

Amid many contradictory views about treatment, one point is generally agreed. The tic itself should not be attacked. Attention should never be drawn to it, and attempts to 'cure' by shaming, ridiculing or punishing the child are actively harmful.

Two questions concerning treatment are often debated. Is any treatment at all needed? If it is, how effective is it likely to prove? Most doctors with experience of the condition agree that psychological factors are important in causation: the dispute is over the need and the efficacy of psychological treatment. In my view the answers depend upon the severity of the disorder.

Fortunately, the *mild cases* form the large majority; many of them do not even reach the doctor. If the tic is no more than a slight nuisance, and if there is no evidence of marked emotional disturbance, I consider that treatment is not indicated. The child is in a phase of adjustment which is usually achieved without much difficulty. The tic seems to function as a

safety valve: it may irritate the mother, but causes the child little if any inconvenience (often he seems to be almost unaware of it). With common sense and kindness the tic and the underlying disturbance should pass off uneventfully.

Severe cases are fortunately few. In these the tic may be so grotesque as to provoke derision, with consequent aggravation of the underlying emotional disorder. In these children the original emotional disturbance was severe, or the tic has been mishandled, and I believe that early and expert psychotherapy is necessary. They should not be fobbed off with reassurance which does not reassure, or with ineffective drugs.

In the *intermediate cases* the practitioner must decide what treatment he himself can or should attempt. The decision is based upon his experience and flair in handling people, and also, it must be said, on the amount of time he can devote to any one patient. Few, if any, of these cases need be referred to a psychiatrist. The practitioner's main tasks are to exclude organic disease, and to reassure the parents that the child will grow out of the disorder if sensibly handled. Obviously, the reassurance is more likely to be accepted, and to prove correct, if it is based on a thorough clinical examination and subsequently a rational explanation of the underlying difficulties.

The doctor must be prepared to listen. This is an important part of treatment. Where emotional and personal factors are involved, if he speaks too soon he runs the risk of moralizing rather than treating. The mere ventilation of difficulties often helps to lessen the tension and anxiety with which the tics are associated. The father who is over-ambitious for his child, and the mother who is over-possessive, may be difficult to handle, but the effort is always worth while. Guidance should be offered, although it may not always be accepted. Even psychologists sometimes find it difficult to believe that they are over-restricting, over-correcting or over-driving their own children. The benefits of treatment should be not only an improvement in the tic but, perhaps more important, an improvement in the child's well-being and reactions to difficulties which, it may be hoped, will stand him in good stead all his life.

Drugs.—Although phenobarbitone and other sedatives are often used in the treatment of tics, I know of no drugs which can certainly be said to help, except possibly as a vehicle for suggestion. An immediate objection to their use is that they may act as 'symptom-swappers'—one symptom or sign being replaced by another, because the fundamental disturbance has not been affected. More important is the fact that the use of drugs so often implies a superficial approach to the problem.

In this type of disorder the successful doctor is the one who treats the patient rather than the symptom, and offers guidance rather than a prescription.

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MINOR DENTAL DISORDERS IN CHILDREN

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THERE must be many occasions when parents take their children to their medical practitioner, rather than to their dental surgeon, for advice regarding a dental problem. They may feel that the dental condition has a 'medical' basis in that a dietary defect has produced 'soft enamel' or that a failure of eruption of one or more teeth is a manifestation of some general medical disorder. Their attendance, however, may arise from quite different motives. They may feel that their doctor is likely to limit his activity to giving them advice, which they may disregard if they wish, whereas a visit to their dental surgeon may have the unfortunately final effect that he may not only give advice but smartly follow this up by some treatment which they fear may be distasteful to the child and, in consequence, to themselves.

In other cases parents feel that they may be unpleasantly reprimanded by their dental surgeon if they present their child with a mouthful of carious teeth resulting from their persistent neglect to seek treatment, whereas they may find that their doctor is more sympathetically inclined and may even offer some pleasant justification as to why it was reasonable for them not to have arranged dental treatment previously. Medical advice to parents consisting solely of the suggestion that the child should see a dentist may therefore have the unfortunate result that they obtain no advice at all and simple dental conditions may be left until they are complex and necessitate treatment procedures distressing to the child.

It is hoped that the notes that follow may be of assistance to medical practitioners on the receiving end of child patients with dental problems. Only some of the more significant conditions solely affecting the teeth of children will be discussed, not those involving primarily the oral mucosa or gingivæ. Traumatic injuries of the teeth are also omitted since these require immediate advice and treatment in a dental surgery.

ERUPTION OF TEETH

An unfortunate feature of books on babies is the rigid table of eruption dates for the deciduous dentition. A mother eager to show off baby's first incisors to her friends at six months according to the book is clearly likely to become anxious when baby is still edentulous at ten months. It must be emphasized that six months' delay is without significance and occasionally normal babies are still toothless at thirteen months. By this time it is justifiable for simple intra-oral radiographs to be taken if the parents are

really anxious, so that their minds will be set at rest by a demonstration of the normal number and formation of the unerupted teeth.

If there is a six months' delay in deciduous incisor eruption a similar delay may be expected in the eruption dates of the other deciduous teeth. Late eruption has even the advantage that the onset of caries is also likely to be delayed and the child, in consequence, older and more amenable to the restoration of carious cavities as they arise.

It is unfortunate that the treatment procedure of lancing the gums over deciduous teeth in process of eruption is still advocated in some textbooks. It cannot be too strongly stressed that this is completely unnecessary. Any tooth in a normal child will erupt in its own good time unless it is in a grossly abnormal position or is mechanically prevented from its proper eruption by, for example, the presence of a supernumerary tooth. The one exception where operative treatment is indicated is when there is an established cyst of eruption over the tooth crown, but caution should be exercised that a bluish swelling over a deciduous molar in process of eruption —a condition which requires no treatment and which merely indicates extravasation of blood into a normal follicle as a result of trauma from the already erupted opposing molar—is not misdiagnosed as a cyst of eruption.

In short, in an otherwise normal child, masterly inactivity with parental reassurance is normally indicated in relation to the eruption of the deciduous dentition, whereas absence or non-eruption of permanent teeth is a matter for careful investigation and radiological diagnosis by a dental surgeon.

The debate continues as to whether teething produces nothing but teeth or whether to this process can be ascribed the formidable list of symptoms still lingering in textbooks. The truth, as usual, is possibly halfway between the two. The difficulty is that, since at any age between six months and two years it is likely that one or more deciduous teeth are in process of eruption, any illness during this period may be conveniently ascribed to 'teething'. Suffice it to say, perhaps, that the majority of dentists' own children pass through this period with no stronger prescriptions than small doses of analgesics and there would seem little purpose in further insulting the baby's metabolism by the administration of, say, purgatives.

ABSENCE OF TEETH

Although partial anodontia of the permanent dentition is very common, the teeth most commonly absent being the upper lateral incisors and second premolars, absence of individual deciduous teeth is extremely rare. Even in children who are destined to have absence of the majority of the permanent teeth, for example in ectodermal dysplasia, the normal quota of deciduous predecessors is usually present. When a child, however, has erupted deciduous teeth the crowns of which show a tendency to a conical form, absence of a number of permanent successors should be suspected. Partial anodontia may also be a feature of certain general developmental defects in children such as mongolism, achondroplasia or spina bifida.

ADDITIONAL TEETH

Extra teeth, known as supernumerary teeth or, if they resemble adjacent teeth, supplementary teeth, occur in both dentitions in children, usually just to one side of the midline in the upper incisor region. If a tooth erupts

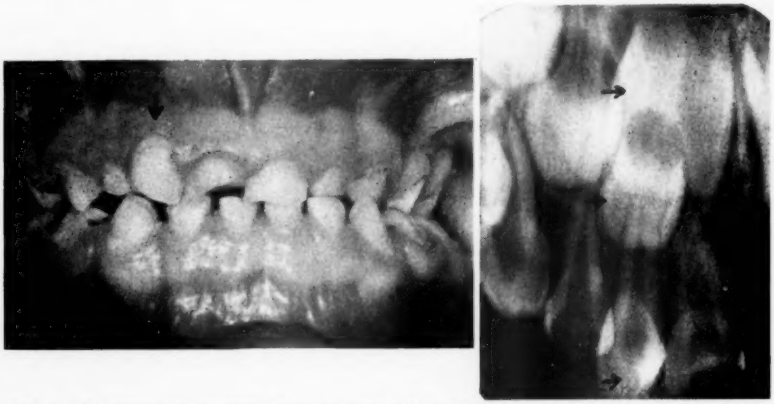

FIG. 1.—Supernumerary tooth lying between the patient's fractured right central and right lateral deciduous incisors in a boy aged 4. The intra-oral radiograph shows that this tooth will be succeeded by another supernumerary tooth associated with the permanent dentition. This tooth in turn will prevent the proper eruption of the right central permanent incisor seen lying above it.

soon after birth in this region making breast feeding impossible, this is likely to be a supernumerary one. Supernumerary deciduous incisors are often followed by corresponding supernumerary teeth associated with the permanent dentition which may in turn impede the eruption of the normal permanent incisors (fig. 1). The most common cause, in fact, of non-eruption of a single permanent incisor is the presence of a supernumerary tooth.

Frequently a supernumerary element in the incisor region in either dentition appears fused to a tooth of the normal series. Alternatively this condition of fusion or gemination may involve two teeth of the normal deciduous complement. It is most often seen in relation to the lower deciduous canine and second incisor and it is rare in this instance for the permanent successors to be abnormal.

CARIES OF THE DECIDUOUS DENTITION

The deciduous dentition may begin to decay at a surprisingly early age. In infants the first sign is the appearance of chalky white areas of decalcification of enamel around the cervical margins of the labial surfaces of the upper incisor. Shortly afterwards frank destruction of enamel and dentine follows, with the establishment of brown-stained carious cavities in these regions (fig. 2). By this time, too, carious destruction of the occlusal surfaces

of the four first deciduous molars may be taking place. This typical picture of rampant caries of the deciduous dentition may be present by the age of thirty months.

It cannot be too strongly emphasized that this condition is invariably due to the teeth crowns being in contact for prolonged periods with either refined sugars, which are broken down into lactic acid by oral lactobacilli, or to acid substances themselves. There is no reliable evidence in these cases that the chemical structure or hardness of the enamel is at fault and the administration of calcium tablets or vitamin preparations is completely useless in halting the condition.

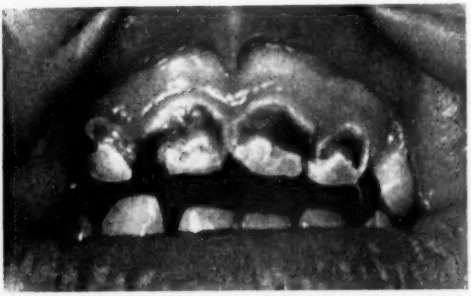

FIG. 2.—Typical rampant labial caries of upper deciduous incisors in a 2-year-old child who had sucked a sugar dummy throughout babyhood. The crowns will soon crumble away to leave only roots. These will later become infected, with a likelihood of chronic abscess and sinus formation following.

The mother should be asked whether the child has a dummy (which in itself does not appear to produce caries), and, if so, whether the dummy is dipped in honey, jam, golden syrup, castor sugar, vitamin syrup or other similar sugary and sticky substances. Alternatively, whether the child regularly has a hollow dummy or 'infant feeder', of which there are several commercial patterns, into which any of the above substances are poured. Occasionally, well-meaning parents will fill these with cod-liver oil and malt which, as it is said on the bottle, is 'good for the bones and teeth' but taken in this form disastrous for the dentition. The nightly sucking of this type of comforter provides one of the most efficient means of destroying the crowns of the whole deciduous dentition by the age of two years.

Another known factor producing rampant caries of the deciduous dentition is the leaving of a bottle of milk and sugar, water and sugar or cocoa and sugar in the baby's cot at night from which he may sporadically suck and thus keep up the necessary high refined carbohydrate concentration around the tooth crowns. Frequent administration of acid iron tonics and the continual giving of rose hip or blackcurrant syrups will produce a similar result.

There is every reason to believe, in fact, that rampant caries of the deciduous incisors before the age of three is due solely to local factors. If these are eliminated, this type of caries will be arrested. If they persist, carious destruction of the upper canines will follow, subsequently of the lower incisors and canines and finally the last erupting second deciduous molars. In consequence there are many edentulous four-year-olds.

If there is no excessive administration of refined sugars the average child

should not develop caries until the age of four, and certainly not of the upper deciduous incisors. After this age, even with the most careful dietary control it is likely, unless the child is fortunate enough to be in that group of individuals who are mysteriously caries immune, that he will develop individual carious cavities, the first likely attack being in the pits and fissures of the first deciduous molars and on the distal interproximal surfaces of these teeth at their contact points with the second molars. Although it is easy for the dental surgeon to detect occlusal cavities by clinical examination, these contact point cavities may remain not only invisible but symptomless until of such a depth that the pulps of the teeth are endangered. Ideally therefore, after the age of four any caries-prone child should have bite-wing radiographs at six-monthly intervals in order that these particular cavities may be detected and filled when they are still at an early stage of development.

Although this is ideal from the point of view of preserving an intact dentition, with the recent evidence on the potential hazards of excessive radiation, current views are that the taking of such radiographs (they comprise only two intra-oral dental films) should be restricted to yearly intervals, which is believed to be perfectly safe. The more frequent use of this diagnostic aid should be reserved for those periods in childhood of greatest carious activity and for those cases in which it is known by experience that carious attack is more liable on interstitial rather than exposed visible surfaces.

There have been many recent improvements in relation to the restoration of deciduous teeth and by the use of handpieces, equipped with water-spray cooling, which rotate burs and cutting points, including diamond instruments of special design, at very high speeds to reduce vibration, it is now possible to restore these teeth with minimum discomfort, certainly no pain and, in consequence, little mental distress, particularly if a kindly and competent operator gains the child's complete confidence. The alternative to the restoration of teeth—which is extraction—may have dire consequences not only for the dentition but for the child.

THE IMPORTANCE OF PREVENTION

If the carious cavities, especially in the first deciduous molars, remain undetected until the young child develops toothache, usually the only practicable treatment is extraction of the offending tooth or teeth. It cannot be too strongly stressed that it is never in the best interests of a child especially if under five, for his first experience of dental treatment to be an extraction under gas. If perchance, he be in the minority who, as the anæsthetists say, are 'uncooperative' and genuinely terrified, it is hard to believe that such a distressing experience may not have a profound detrimental psychological effect in later years. Further, a technical disadvantage of a 'have it out when it hurts' policy is that if two or three badly carious teeth are extracted it is likely that other restorable cavities remain. If the

child remembers and resents the insult of the anæsthetic experience he may be an impossible patient for restorative treatment of these remaining cavities. In consequence of his behaviour, and through no fault of his own, he is now doomed to a series of general anæsthetics at, say, yearly intervals until his deciduous dentition is no longer with him. Small wonder that such patients, when adult, may dread visits to the dentist and pass on their fears and memories again to their own children.

FIG. 3.—Rampant caries, of unknown origin, of the mixed dentition in a 10-year-old girl. The teeth are of normal formation and calcification. It was not possible to discover any dietary or other etiological factors to account for this high caries susceptibility.

Note the ominous white areas of enamel decalcification on the labial surfaces of the upper central incisors which have already progressed to frank cavitation on the patient's left lateral incisor. The crown of the right lateral has been completely destroyed by caries, only three years after eruption.

The sister of this child is her identical twin. She lives in the same home and her teeth are caries free.

It is a common opinion among parents that, since it is going to fall out in any case, the deciduous dentition is of the least importance. This, of course, is far from the truth. Apart from all the advantages of an intact dentition in childhood, and a child appreciates an intact dentition as much as an adult, and has as much right to an equal degree of dental care and attention, there are some deciduous teeth, the early loss of which results in a majority of cases in orthodontic deformity. In particular when there is early loss at, say, the age of five, of the lower first and, even more important, the second deciduous molars, forward drift of the lower first permanent molars and backward collapse of lower incisors and canines is almost certain to occur unless space-retaining appliances are used. The purely local effect of this is that there will be insufficient antero-posterior room for the successor premolar teeth to erupt into the arch at the age of ten. Much more serious, however, is the possibility, particularly in those children with a facial skeletal pattern favouring protrusion of the upper incisors, that this collapse of the lower arch consequent upon early lower deciduous molar loss will carry with it the risk that the lower lip will fall back, come to lie behind the incisal edges of the later erupting permanent upper incisors and produce their gross proclination. We have then the curious situation that extraction of deciduous teeth at an early age because it is 'simpler' than restoration may well involve the child in some years of elaborate, unpleasant and time-consuming orthodontic treatment in early adolescence in order to achieve a reasonable facial and dental appearance which would have been unnecessary had the deciduous teeth been restored.

CARIES OF THE PERMANENT DENTITION IN CHILDREN

In later childhood years it is impossible to ascribe caries to purely local factors. It would seem probable that every child has an inherent degree of susceptibility to caries. For the caries-susceptible individual continual consumption of refined carbohydrates, through, for example, chain sweet-eating, biscuits in bed, carbonated beverages as the main liquid nourishment, can be disastrous and involve the extraction of much of the permanent dentition in the teen-age years. Particularly ominous in these cases, foretelling the doom of the dentition, is the appearance of cervical areas of decalcification (fig. 3) on all teeth and also the development of interproximal cavities in lower incisors.

The diet of the caries-susceptible child must be strictly regulated in so far as refined sugar consumption is concerned if the natural dentition is to be preserved and strict attention must be paid to tooth cleaning, especially before bed. There is no solid evidence that the topical application of sodium fluoride is effective and really no indication for the administration of calcium or vitamin D to 'harden the enamel'. Occasionally, parents request saliva tests for their children with rampant caries. The main tests are the lactobacillus count and an estimation of the salivary buffer capacity. In rampant caries the count will almost certainly be found to be high and the buffer capacity low but these tests are more in the nature of research tools. They do not tell the dental surgeon anything he does not know by clinical observation and in no way help the child to overcome his high caries susceptibility.

The caries-immune child, on the other hand, can commit many of the sins of excessive refined carbohydrate consumption without cavity formation. The sole therapeutic measure at the present day which will reduce the inherent susceptibility of the teeth to caries in childhood would seem to be for the child to be brought up in an area where the fluorine content of the drinking water naturally occurs at, or is artificially raised to, an optimum value of approximately 1 part per million.

COMPLICATIONS OF CARIES IN CHILDREN

Carious cavities in deciduous teeth, as opposed to permanent teeth, may progress to pulp exposure with surprisingly little pain. The subsequent pathology of infected pulpal necrosis and periapical abscess formation may also be associated with few symptoms. It is therefore not uncommon for young children to present with a number of sinuses associated with dead carious deciduous teeth but with no history of significant pain or swelling.

Carious cavities in deciduous teeth with vital pulps cannot be said to have a deleterious effect upon the child's general health, but this is certainly not the case when the ravages of caries have produced dead pulps, chronic apical abscesses and sinuses. Time and again it has been noted that when a child previously below par, subject to frequent minor illnesses, fretful and irritable with a poor appetite and underweight, has dead deciduous teeth with apical infection removed, an astonishing improvement in general health

occurs and he becomes, as mothers say, a different child. There is therefore no indication for leaving such teeth *in situ*, on the grounds that they may maintain space or that they will eventually be exfoliated.

A further complication, fortunately rare in comparison to the permanent dentition, is the development of a dental cyst in relation to a dead deciduous tooth left *in situ*. This cyst formation may occur following rampant caries of the incisors in infancy. Such cysts may envelop the crown of the unerupted permanent incisors as a dentigerous cyst and prevent their eruption. In permanent, in contrast to deciduous, teeth in children, the necessity for dental treatment is unlikely to escape the parent's notice when carious exposures produce acute pulpal pain, and periapical infection gives all the acute symptoms of a periapical abscess. It is sufficient only to mention here that the treatment of an acute apical abscess in a child is still surgical drainage of pus in the periapical tissues by the drilling of an access cavity into the crown pulp chamber in the case of an upper incisor or, with some exceptions, extraction in the case of other teeth. In addition, an incision for drainage may be indicated when pus has formed on the outer surface of the alveolar plate. The proper use of antibiotics in relation to acute abscess formation in children should be looked upon as an adjunct to surgical treatment on these lines. They are no replacement.

FIG. 4.—Enamel hypoplasia due to some systemic disturbance at the age of 10-12 months. The stained depressed pits are not carious cavities. The lower incisors and canines, the upper central incisors and canines are all affected to the same extent. The upper lateral incisors have escaped since they do not start to calcify until 18 months. As for the posterior teeth, only the first molars are involved, the premolars and second molars escaping by virtue of the later age at which enamel calcification begins.

CONDITIONS WHICH MAY BE CONFUSED WITH CARIES

Enamel hypoplasia may occasionally resemble caries. In hypoplasia there is a defect in calcification and structure of the enamel, with an appearance of brown-stained, roughened or depressed areas or pits. Significant hypoplasia, obvious on clinical examination, is rare in the deciduous dentition. It should be remembered that the enamel covering much of the crowns of the incisors, half the canines and the occlusal surfaces of the first and second molars has already calcified before birth when the fœtus has extracted from the maternal circulation all those factors required for the proper formation of this prenatal enamel. If, however, there has been some generalized systemic disturbance in the few weeks after birth, very occasion-

ally hypoplastic pits may be detected on all teeth involving the enamel along the neonatal line, which is the junction between prenatal and postnatal enamel. Such hypoplastic pits in deciduous teeth rarely become carious and are of little significance.

In the permanent dentition, hypoplasia is much more commonly seen, particularly of those portions of enamel calcifying between the ages of six and eighteen months. It would appear that systemic disorders or infections, such as gastroenteritis, severe exanthemata, infantile tetany or malnutrition, produce so much disturbance of calcium metabolism that enamel calcification is grossly defective during the period concerned. During this time permanent tooth enamel is forming on the incisal edges of all incisors and canines, with the exception of the upper lateral incisors, extending two or three millimetres towards the cervical margins of these teeth. These, and the occlusal surfaces of the first permanent molars, are the areas likely to be affected by such systemic disturbances. The upper laterals, all premolars and all second molars, however, will escape since their calcification does not start until approximately eighteen months, two years and four years respectively (fig. 4).

FIG. 5.—Amelogenesis imperfecta in a boy aged 8, whose mother's teeth were similar. The enamel of all the teeth is brown in colour. It is so soft that it rapidly wears away or flakes off as shown on this boy's central incisors. There is, as yet, no superimposed caries.

In short, areas of brown, pitted enamel resulting from hypoplasia can, by their distribution, be related to calcification dates and represent the scars of systemic disturbances, whereas areas of caries are related primarily to zones of carbohydrate stagnation. It is depressing for those who advocate proper nutrition in babyhood as an insurance against caries of the permanent dentition, that in cases of generalized enamel hypoplasia due to malnutrition, carious attack of hypoplastic areas is uncommon.

There are two conditions, loosely grouped under hypoplasia, which, although infrequently seen, are important to mention since both are inherited and, in consequence, parents may feel that they should more properly consult their medical adviser rather than their dental surgeon. The first is *amelogenesis imperfecta* (*hereditary brown enamel*) and the second is *dentinogenesis imperfecta* (*hereditary opalescent dentine*).

In the main variety of amelogenesis imperfecta all the enamel of the teeth of both dentitions is of a characteristic brown or yellowish-brown colour

and is uniformly rough and soft. The consequent food stagnation results in caries and gingivitis. The morphology of the teeth and the structure of the dentine are otherwise normal (fig. 5). If the deciduous dentition is affected the permanent is unlikely to escape. Although some cases may gain a satisfactory æsthetic appearance by the construction of jacket crowns on upper incisors and canines, the majority of these child patients are doomed to full dentures in late adolescence.

FIG. 6.—Dentinogenesis imperfecta in a boy aged 6. The deciduous teeth, particularly the incisors, are remarkably translucent with brown-coloured dentine shining through thin smooth enamel. The first representative of the permanent dentition in this case, the lower right central incisor, appears better calcified but will later discolour. This boy, who is perfectly normal in every other respect, has a brother with a similar dentition and a sister with normal teeth. The teeth of his mother and maternal grandfather also show the condition.

In dentinogenesis imperfecta the enamel has a smooth surface but the dentine is extremely poorly calcified, elastic and discoloured. The teeth are of a honey-brown colour and have a remarkable translucency (fig. 6). A simple test is to place the electric bulb of a diagnostic set behind the incisor teeth, when they glow amber with the transmitted light. Translucency of this nature does not occur in any other dental condition in children. Although the teeth of children with osteogenesis imperfecta may be affected by dentinogenesis imperfecta, the great majority of children with opalescent dentine are otherwise perfectly normal and it is quite unnecessary to subject the child to skeletal radiographs or investigations, such as estimation of the blood chemistry.

In this condition, both deciduous and permanent teeth undergo rapid attrition and in severe cases the biting surfaces of the deciduous molars are soon at gum level. This gross attrition does not give rise to pain or exposed dentine but often causes death of radicular pulps and the insidious development of chronic apical abscesses. Radiographs show the teeth to have an abnormal morphology with bulbous crown, slender roots and a characteristic absence of pulp chambers in the tooth crowns. As a rule, the permanent dentition is less affected than the deciduous but too much optimism should not be shown as permanent teeth of normal appearance erupt since their discoloration will follow later. Caries rarely occurs in teeth with opalescent dentine. As with amelogenesis imperfecta, no prophylactic or therapeutic treatment is known which is of the slightest benefit in improving the structure, calcification or colour of the dentine. The taking of calcium is certainly

useless. Although the construction of crowns is practicable in a small proportion of cases, sooner or later most will have to have multiple extractions and dentures.

Both these conditions are transmitted as Mendelian dominant characters and are not sex linked. The chances therefore are that half the offspring of an affected and unaffected parent will exhibit the condition and the other half will not. Only those children who are affected will pass on the gene in turn—to half their future children. Those children who are not affected may confidently breed in later years knowing that the dreaded brown teeth will never occur in their families. A mother who has one child with a normal dentition and the other with a dentition affected by either dentinogenesis or amelogenesis imperfecta may ask what the likelihood is, if she has a third baby, of the teeth being affected and whether there is anything she can do or take to avoid its occurrence. The answer to the first question is that no-one can forecast, as the chances are equal, just as a boy cannot be promised rather than a girl, whilst the answer to the second is, unfortunately, nothing. The manner of inheritance, however, should be carefully explained, especially by making a diagram of the family tree, to point out that there was nothing her husband or herself could have done during pregnancy, or in the care of the child subsequently, which could have avoided the development of the condition and to lay any mental ghosts such as ancestral syphilis. Finally, she may be comforted to know that in one way or another the recent advances in dental treatment procedures for children will enable her child, both during childhood and in later adult life, to have a functional dentition of an appearance scarcely detectable from normal.

STAINING OF TEETH IN CHILDREN

Finally a few points regarding stains on children's teeth. In young children black or dark brown deposits may develop on the enamel of the deciduous teeth, especially near the gum margins. These have no deleterious effect upon the teeth whatsoever and, indeed, indicate that the child is likely to be caries immune. Green stains on the teeth of the permanent dentition, however, are more ominous and, if left *in situ*, decalcification and later carious cavitation of the enamel in the affected areas may well occur. All superficial stains in children may be removed in a matter of minutes in the dental surgery, even if too tenacious for the toothbrush.

There is, however, one intrinsic or internal stain of the deciduous teeth in children of interest to the hæmatologist, pædiatrician and children's dentist. This is the green staining of the dentine resulting from icterus gravis neonatorum and with the success of exchange transfusions more children are now seen with this condition. Advice to those parents who are concerned lest the permanent teeth will also be green coloured is straightforward: they will be perfectly normal.

HYDRONEPHROSIS

A CLINICAL APPRAISAL

By R. T. BURKITT, M.D., F.R.C.S., F.R.C.S.I.
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HYDRONEPHROSIS is the urological Cinderella. Interest always tends to be centred on the cause rather than on the condition itself. That it justifies respect in its own right is evidenced not only by its occasional dramatic features and vast size, but even more by the insidious way in which it may trip the unwary into diagnostic pitfalls. Many experienced doctors seem unaware of the gigantic size a hydronephrosis may reach. Multiple paracenteses on a misdiagnosis of ascites have been reported, and Dennehy (1953) quotes the largest recorded case as containing no less than 30 gallons (136 litres) of fluid! One hesitates to conjecture how many innocent appendices have been removed, how many sound spines have been manipulated or how many needless laparotomies have been performed for the small undiagnosed hydronephrosis.

THE CAUSES OF HYDRONEPHROSIS

The causes of hydronephrosis are, of course, legion, and include any obstructing lesion of the urinary tract. One tends to think of the ureter usually being at fault, but one should emphasize the enormous hydronephroses which often follow a long-standing distal obstruction, such as a urethral stricture or congenital urethral valves.

The hydronephrosis which accompanies prostatic enlargement is of special interest, as it used always to be regarded as the direct result of the bladder-outlet obstruction. In many cases, however, it has been demonstrated that bladder drainage, whether urethral or suprapubic, will fail to alter the state of the kidneys. Following prostatectomy, on the other hand, the hydronephrosis will rapidly diminish. This went far to explain the unsatisfactory results which so often followed the 'life-saving' operation of suprapubic bladder drainage. The cause of this phenomenon is difficult to determine and, whilst some believe that it is due to direct pressure on the lower end of the ureters by the enlarging prostate, others have postulated a hormonal explanation.

A common cause of hydronephrosis which has been responsible for needless heartburning, is the so-called 'aberrant vessel'. The purist will insist that the vessel is not 'aberrant', that the primary lesion is the hydronephrosis, and that on no account must this vessel be divided. Such an operation, he states, will not only fail to cure the patient's symptoms, but will result in lower-pole renal ischæmia, with dire consequences. In view of this, all manner of brilliant but often complicated operative procedures

have been devised to circumnavigate this 'aberrant' vessel (e.g. Adams, 1951; Stewart, 1947, 1957). Many surgeons of wide experience, however, who have ignored theory and divided these vessels time after time will insist that not only have their immediate results been excellent, but that

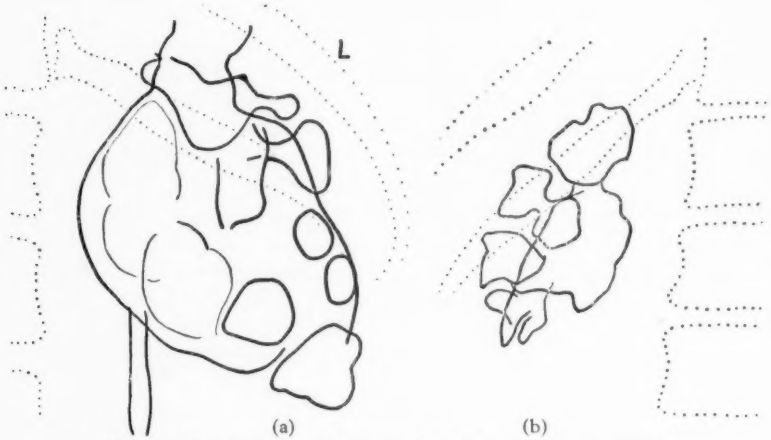

FIG. 1.—Two examples of hydronephrosis due to aberrant vessels.

no late ill-effects have ensued. Although some infection may still persist, and although the pyelographic appearances may remain little changed, the patient's symptoms are often miraculously cured. Figure 1 shows two fairly typical tracings of hydronephroses due to aberrant vessels.

Figure 1 (b) is the tracing of the pyelogram of a young man who had been suffering from persistent pain in the loin for three years. Slight urinary infection was present, but this had not produced any symptoms. At operation a regular leash of aberrant vessels was found, and this was completely divided. His pain was entirely cured and did not return although the pyelogram remained little changed.

Attention may be drawn to the presence of a hydronephrosis only when complications arise. It is difficult, indeed, to see why the uncomplicated hydronephrosis should ever cause symptoms at all. The theory of 'tension' carries little weight when one realizes the extremely low pressure at which the kidney secretes. The important complications are infection, hæmorrhage, rupture and hypertension.

INFECTION

Since stasis always results in infection, and since this is especially true of the urinary tract, it may seem surprising that it is so long before a large hydronephrosis becomes grossly infected. The probable reason for this is that the stasis is more apparent than real, as Maitland (1949) has pointed out. Hence, even an apparently completely closed hydronephrosis may remain free from infection and therefore symptomless for many years. Even

when it is mildly infected there may be no symptoms, and it may only come to light on a routine examination.

Figure 2 is a tracing from the pyelogram of a young girl who was found to have albuminuria at a routine medical examination performed prior to her taking up nursing. Despite being heavily infected, she was completely symptom free, and had never had an attack of cystitis in her life. The infection was treated with antibiotics and, in view of the complete absence of symptoms, it was not considered justifiable to embark on any surgery. The only result of our investigations was that she decided she would not after all become a nurse.

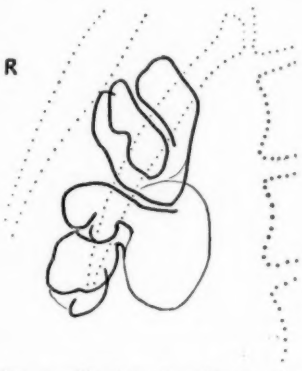

FIG. 2.—Tracing of pyelogram of a heavily infected, but symptomless, hydronephrosis.

Sooner or later the lower urinary tract is bound to become infected, and symptoms of mild recurrent cystitis will ensue. As with other diseases of the urinary tract, it can never be overemphasized how silent an organ the kidney may be, and how symptoms rarely occur until the lower urinary tract is involved—often at a late stage of the disease. For this reason no urinary infection, no matter how mild, should be allowed to persist without the patient being submitted to a full urinary investigation. Where children are concerned this is especially important, as they may have become so used to the symptoms of a mild urinary infection that they have adapted themselves to it and come to regard it as one of the normal hazards of existence. They may have had urinary frequency ever since they can remember and, if a faulty history is taken, this night frequency associated with some precipitancy may result in bed-wetting and be casually labelled 'nocturnal enuresis'. If an enuretic has day-frequency as well as bed-wetting, and if he wets his pants as well as his bed a full urological investigation is imperative. Careful history-taking in every case of enuresis is of the very greatest importance as it not only shows which cases must be investigated, but with equal importance it shows which patients need not be subjected to the discomfort of a full urinary investigation. An intravenous pyelogram is one of the most valuable investigations in modern medicine but no medium has yet been synthesized which is both absolutely safe and absolutely painless.

Figure 3 is the tracing of a pyelogram taken of a bright and intelligent little girl who reached a child-guidance clinic as a chronic bed-wetter. She was referred to us to exclude an organic lesion, and was found to have a grossly infected urine due to hydronephrosis. Despite antibiotic therapy the infection could not be satisfactorily controlled, and the bed-wetting persisted. Finally the diseased kidney was removed, and the result was miraculous. The bed-wetting immediately ceased, and she became quite a different child.

Sudden infection of a hydronephrosis may result in very rapid distension of the kidney and the patient presents as a dramatic abdominal emergency

(Burkitt, 1950). This may be mistaken for all manner of conditions if the 'acute hydronephrosis' is not known and therefore considered. The patient presents with excruciating pain of sudden onset, high fever and an enormous abdominal mass. Acute splenitis in an already grossly enlarged malarial spleen is the diagnosis that first comes to mind in the tropics, and this is probably aided and abetted by the common finding of malarial parasites in the peripheral blood. In this country acute myelogenous leukæmia and spontaneous rupture of the spleen are misdiagnoses which have been observed. Treatment generally consists of an immediate nephrectomy.

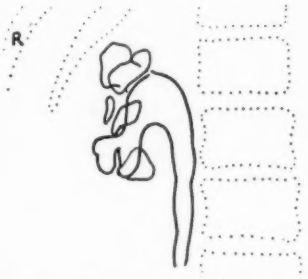

FIG. 3.—Tracing of pyelogram of a young girl with grossly infected hydronephrosis.

There is one interesting feature of the large hydronephrosis which is not universally known, and which may lead to endless confusion. The degree of distension sometimes varies, and with this variation a drastic change occurs in the clinical signs. It only requires a very slight diminution in the tension for an enormous tumour to become quite impalpable. One can imagine how difficult it would be to feel a partly collapsed Rugby football inside the abdomen! If the hydronephrosis is seen at different times by different observers who are unacquainted with this phenomenon, most unfriendly recriminations can arise. The following case is a good example:

E.R., a woman of 71, was admitted to Upton Hospital on April 6, 1957, as an abdominal emergency. Severe abdominal pain and persistent vomiting had been present for about eight hours. Her previous health had always been good, but she admitted to a similar but slighter attack about three months previously. On examination she was found to have a large and excruciatingly tender mass in her left loin, and a tentative diagnosis of acute hydronephrosis was made. She was treated conservatively and to our surprise her symptoms had entirely gone by the following morning. No suspicion of a mass could now be felt. An intravenous pyelogram showed a slight left-sided hydronephrosis, but so little abnormal was this that we found it hard to accept it as being responsible for her huge tender mass. She remained symptom free and was discharged from hospital a week later. In three weeks' time she was back in hospital again with an identical attack. On this occasion the symptoms were so severe that immediate operation was advised. On opening the abdomen a large tense mass was identified as being a left hydronephrosis. Suddenly the swelling began to diminish and in a few moments the size of the kidney was almost normal. No cause of ureteric obstruction could be found, and one had to accept some form of ureteric spasm. No further surgery was considered justified. Following the operation the patient was told that should a further attack occur she would probably have to have her kidney removed, but this appears to have frightened her out of any further attacks, and she has so far remained well.

HÆMORRHAGE

Occurring in an 'open' hydronephrosis, hæmorrhage will result in sudden painless hæmaturia. Why the bleeding should occur is often difficult to determine as no ulceration may be found in the subsequent specimen.

Figure 4 is the pyelogram of a 7-year-old boy who presented with sudden painless hæmaturia, which appeared to follow an attack of acute tonsillitis. A diagnosis of acute nephritis was made, and it was only when the bleeding had remained unabated for a week that a 'surgical' cause was contemplated. In view of the possibility of nephritis an intravenous pyelogram was considered unwise, and a retrograde picture was taken. This showed a large right-sided hydronephrosis. Eventually the kidney had to be removed, and his health has since been excellent.

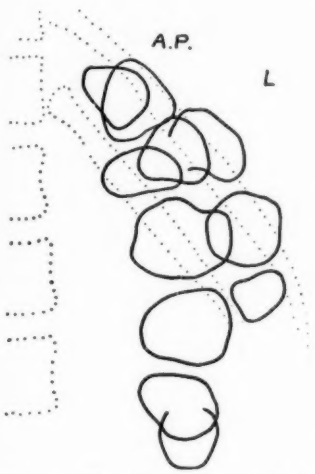

FIG. 4.—Tracing of a retrograde pyelogram of a boy, aged 7 years, with sudden painless hæmaturia.

Occurring in a 'closed' hydronephrosis, a sudden hæmorrhage will precipitate an acute abdominal emergency (Burkitt, 1950). The patient may present in agonizing pain, acutely shocked and with an enormous tender abdominal mass. The symptoms are similar to the acutely infected closed hydronephrosis, and once again the only treatment is emergency nephrectomy.

RUPTURE

Mild hæmaturia following trauma is a common condition and generally requires no treatment. The kidney is an unusually well-protected organ and for true rupture of the previously normal kidney to occur requires an exceptionally severe injury. If the appearances suggest a ruptured kidney following a trivial injury, it is fairly certain that one is dealing with a previously abnormal kidney, most likely a hydronephrosis.

A typical case was a 9-year-old boy who developed severe hæmaturia after a fall while skating. In view of the trivial nature of the injury a true ruptured kidney seemed most unlikely. A large mass was palpable in his left loin, and it was thought that this was probably a hydronephrosis and not a huge retro-peritoneal hæmatoma from a ruptured kidney. He was treated conservatively and was soon symptom free. Investigations confirmed this mass as being an unusually large hydronephrosis, which was subsequently removed.

It should be borne in mind that even a severely ruptured kidney does not necessarily call for immediate surgery, and this is only justified if the condition appears to be progressive. Even a comparatively small injury may result in a large retro-peritoneal hæmatoma which may completely resolve and leave a normally functioning kidney. The following case is of interest in this respect, even though we were never able to assess the final result.

A young Indian was admitted to a nursing home in Nairobi, following an accident when he had fallen from a scaffolding. An enormous mass was present in his left loin and abdomen and he had profuse hæmaturia. A diagnosis of severe rupture of the left kidney was made, and operation advised. The patient refused. Throughout the next week the severe hæmaturia persisted and the mass in the abdomen remained unchanged. Despite our persuasion he remained adamant in his refusal to undergo operation. Suddenly at the end of a week the hæmaturia ceased, and the swelling

began to diminish. By the end of a further fortnight the swelling had entirely gone, and he was symptom free. He left hospital and despite all our entreaties would never let us subject him to a subsequent pyelogram.

HYPERTENSION

When unilateral renal disease was established as one of the causes of hypertension, the hunt for abnormal kidneys became intense. Attention was specially focused on hydronephroses when Herdman and Jaco (1950) were able to demonstrate the relative ischæmia that existed in these cases; as hydronephrosis is one of the commonest of renal abnormalities, there was a wide field for nephrectomy. Unfortunately, results have not been very encouraging and, although one occasionally has a brilliant success, the more usual outcome is for the blood pressure to rise to its previous level after a temporary drop. Cases, such as the following, keep one on the alert.

C.B., a man of 46, was first seen on January 29, 1951, suffering from headaches which had been increasing in severity for the previous five years. A month before attending hospital he appeared to have had a cerebral vascular lesion, and his blood pressure was 186/130 mm. Hg. An intravenous pyelogram showed what at first looked like a non-functioning left kidney. Careful scrutiny, however, revealed an enormous hydronephrosis, and this was confirmed by a retrograde picture. Nephrectomy was performed on February 26, with an uneventful convalescence. On March 23 his blood pressure was 168/110 mm. Hg. On April 13, it was 150/110 mm. Hg, and on May 3 it was 130/90 mm. Hg, and there it remained.

SUMMARY

An attempt has been made to demonstrate the importance of the hydronephrotic kidney as the cause of symptoms which are often vague and misleading, and to emphasize the frequency of this renal abnormality. The gratifying results which have followed division of aberrant vessels, where these are responsible, and nephrectomy, when deemed advisable, have made one a little wary of adopting some of the fanciful plastic procedures which have recently come into vogue. Undoubtedly cases often occur in which the relief of symptoms following division of aberrant vessels is only temporary, but can one be so sure that these plastic procedures will produce a permanent cure? It seems a pity not to give the patient the benefit of an operation which long experience has proved to be so often satisfactory.

I should like to thank Mr. Norman Matheson, Mr. Maurice Lee and Mr. Raymond Ramsay from whose patients some of this clinical material was obtained.

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CHEST X-RAYS FOR EVERYONE

By BRIAN C. THOMPSON, M.D.

Windsor Chest Clinic

In assessing x-rays of the chest, it is often helpful to have a previous film for comparison, even if this is supposed to be clear. At the Windsor Chest Clinic, we so often find it necessary to obtain such films that it has become a rule to question all new patients at the outset about any previous radiology —where and when and for what reason it was done—so that any earlier films can subsequently be traced if required. As a result, it is now possible to determine how much chest radiology has been experienced by that section of the local population which has happened to attend here since this record was begun. A total of 4,232 consecutive adult patients, aged 19 years and over, have been sent for x-ray by general practitioners during the past year or so, because of suspected chest disease. Patients examined for purely routine purposes, such as fitness for work or occupational risk or because of contact with tuberculosis, have been excluded. The reason for referral was usually a recent acute respiratory illness or because of persistent respiratory symptoms.

SEX AND AGE INCIDENCE

It can be seen in table I that the sexes were almost equally represented, that nearly two-thirds of all patients had at some time previously had a chest x-ray, and that this was equally so in men and women. When age is considered, however, certain differences appear. Of the total patients, 1,763 (41.7 per cent.) were aged 19 to 35. Practically half (49.6 per cent.) of the 2,122 women fell into this 15-year group, compared with only about one-third (33.7 per cent.) of the 2,110 men, a difference that is statistically significant ($p=0.03$). Further, the younger patients had been previously x-rayed more often than older ones (table II): three-quarters of those under the age of 35, compared with less than three-fifths of the remainder ($p=0.09$). Of the younger group of patients, 81.7 per cent. of males had been previously x-rayed, or 10 per cent. more than the corresponding females (table III), a difference which, however, is of doubtful statistical significance ($p=0.3$).

TIME OF PREVIOUS X-RAY

One-quarter of the patients who had been previously x-rayed had had their latest chest x-ray within the past twelve months, and nearly another quarter within the twelve months before that; thus, 1,270, or 30 per cent. of the total of 4,232 patients, had been x-rayed within the past two years (table IV). Of those who had been x-rayed, but not so recently, the majority fell, as

might be expected, into the older age-group: of the 25 per cent. whose last x-ray was more than five years earlier, nearly two-thirds were aged over 35.

REASON FOR PREVIOUS RADIOLOGICAL EXAMINATION

In all except 58 of the 2,778 patients with an x-ray history, the reason for this had been recorded, whether it was because of symptoms or purely as

	Previously x-rayed	Not previously x-rayed	Total	Percentage previously x-rayed
Men	1,401	709	2,110	66.4
Women	1,377	745	2,122	64.9
Total	2,778	1,454	4,232	65.6

TABLE I.—Incidence of previous x-rays, according to sex.

routine—e.g. by mass radiography, or for National Service call-up. They have thus been broadly classified as 'routine' or 'non-routine', as shown in table V. Of the 2,720 patients for whose previous radiology the reason was recorded, in 1,697, or 62.4 per cent., the reason was 'routine'. There was no substantial difference between the sexes in this respect.

DISCUSSION

How far this sample is representative of the local population as a whole, is difficult to determine. Chest x-rays can be easily obtained at this clinic, without previous appointment and with reasonable rapidity, and as a precautionary measure, general practitioners are encouraged to refer as many as possible of their patients for relatively trivial symptoms and without usually expecting serious lesions to be revealed. In these conditions, an undue excess of chronic invalids would not be expected, and in fact was not

Age	Previously x-rayed	Not previously x-rayed	Total	Percentage previously x-rayed
Under 35	1,335	428	1,763	75.7
Over 35	1,443	1,026	2,469	58.4
Total	2,778	1,454	4,232	65.6

TABLE II.—Age incidence of patients, according to whether or not they had been previously x-rayed.

found. At the same time, the fact that more of the younger patients were women and more of the older patients men, indicates a degree of selection. Even if, to some extent, our results apply to the 250,000 inhabitants of the Windsor Group, they do not necessarily apply to other areas.

We find, then, that a high proportion of our sample, and perhaps of the population from which it is drawn, have had an earlier chest x-ray: two-thirds of all adults, including four-fifths of the younger men. This previous

radiology may have been multiple, but in nearly half the cases the latest film had been taken within two years. In more than half, it had been done by mass miniature radiography at work, or in public sessions, or on call-up for National Service. The slight excess of young men over young women may be attributable to this last factor.

The area served by this Clinic is largely industrial, many of the residents

	Previously x-rayed	Not previously x-rayed	Total	Percentage previously x-rayed
Men	582	130	712	81.7
Women	753	298	1,051	71.5
Total	1,335	428	1,763	75.7

TABLE III.—Incidence of previous x-rays in patients under 35 years of age, according to sex.

being employed around Slough, Maidenhead and Bracknell, and is rather health-conscious. A mass miniature radiography unit has visited the district about once every two years. It is common experience that persons who volunteer for mass miniature radiography tend to present themselves

Age	Less than 1 year	1 to 2 years	2 to 5 years	5+ years	Total
Under 35	369	281	477	208	1,335
Over 35	339	281	478	345	1,443
Total	708	562	955	553	2,778

TABLE IV.—Date of last previous x-ray.

repeatedly whenever the opportunity occurs. Other persons just as consistently refrain, so that the units find themselves x-raying the same individuals over and over again, with a consequently diminishing yield, whilst failing to cover the recalcitrant remainder. How to get the latter x-rayed

	Routine	Non-routine	Not recorded	Total
Men	884	503	14	1,401
Women	813	520	44	1,377
Total	1,697	1,023	58	2,778

TABLE V.—Reason for previous x-ray.

periodically, or even occasionally, continues to baffle those who believe such examinations to be desirable. This group tends to include a high proportion of the elderly and of persons consciously or unconsciously concealing symptoms, for a variety of reasons. It contains a relatively high proportion of chronic pulmonary tuberculosis, often infectious, and of lung cancer in an operable stage (Heaf, 1956).

Popular education may very slowly send more people for mass miniature radiography. Compulsory examination for National Service now ensures that all entrants are x-rayed at least once, after which they may see reason for repeating the experience of their own volition. Employers and insurance companies are tending to require chest radiology. Otherwise, the non-volunteer can still be reached at an opportune moment—when in hospital or at the outpatients' department for any reason, or when attending his private doctor. Granted the necessary facilities, chest x-rays should be urged and, if possible, insisted upon, as part of routine examination.

This study is essentially concerned with the x-ray habits of a population sample. To indicate a national policy is to go beyond the limits of the material available here, yet further speculation is naturally invited. If it is agreed that all adults should have a routine chest x-ray, how often and at what intervals should this be repeated? It has been shown that second and subsequent examinations of young persons become relatively unprofitable and will become more so as the general incidence of tuberculosis declines. Emphasis will turn to lung cancer, which we must regretfully admit is today rarely detected early enough for radical treatment, except by routine radiography before symptoms have developed. Until better diagnostic methods are discovered, there is a good case for regular repetition of the examination in age-groups especially prone to the disease, perhaps at six-monthly intervals.

The radiation risk involved in repeated diagnostic radiology has lately received much publicity. A single posterior-anterior chest exposure gives an extremely small dose of x-ray, but it might be claimed that its repetition twice a year over the age-period 50 to 70 could reach an accumulation dangerous to health. This would have to be weighed against the possible advantage in cancer diagnosis. It is likely that the economic and possibly psychological objections will remain equally important.

SUMMARY

It seems that chest radiology is experienced by more people than might have been expected. Two-thirds of a local population sample have been found to have had a previous x-ray, and of this number, mass radiography accounted for only 60 per cent. A substantial contribution towards total radiological cover already comes from the combined work of hospitals, clinics and general practitioners. The gap can be further closed by providing easily accessible radiology and by encouraging its use, especially in older persons.

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GENETIC AND OTHER BIOLOGICAL EFFECTS OF RADIATION

By CECIL GORDON, O.B.E., M.Sc., Ph.D., F.R.S.E.
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The medical profession is at this time facing a very difficult problem. It is being asked to be cautious about the use of both diagnostic and therapeutic x-rays because of the very long-term genetic damage and the medium-term disease wrought by these; yet it is also being asked to cooperate with the local authorities in beating targets for the screening of whole populations for detection of undiagnosed tuberculosis. The radiotherapist is faced with a man with ankylosing spondylitis and is being told that the treatment almost certainly increases the man's chances of getting leukæmia. These are the types of problem being posed to doctors in the day-to-day conduct of their profession. But in addition, as a profession, they must also be concerned with the findings that the load of genetically determined disease is quite certain to be increased by the testing of nuclear weapons. The only uncertainty is the *size* of the increase. These are all issues that have come to the front since the explosion of the atomic bombs on Nagasaki and Hiroshima, and more particularly in the last five years. How is the busy practitioner to acquaint himself with these new problems of the most serious importance?

THE CUMULATIVE EFFECT

In these circumstances the medical man, of all types and specialties, can be advised to read the official British[1] and American[2] publications. These set out—and the American Summary Report is particularly readable—the available knowledge, the gaps, which are indeed many, and, notwithstanding the gaps, a certain important conclusion. On the factual side it is clear that man-made radiations will add to the genetic, the very long-term and the medium-term loads of disease that at present result from the effects of the natural background radiation. How large this load is, however, cannot be decided because our knowledge has not been extended far enough. The best that the experts can do is to give upper and lower limits which range very widely. But one startling fact does emerge: man-made radiation from therapeutic and diagnostic sources is of the same order of magnitude as that of background radiation. Moreover, the genetic results from a large number of small doses are the same as from a small number of large doses. To quote from the American report: 'It is the total accumulated dose to the reproductive cells of the individual from the beginning of his life up to the time the child is conceived'. In regard to the medium-term effects, such as leukæmia, the absence of a very low threshold cannot yet be demon-

strated, but it seems that, at the level of dosages in the treatment of ankylosing spondylitis, the probability of developing the disease is proportional to the total accumulated dose. In my opinion, the evidence for regarding leukæmia as a somatic mutation in the bone-marrow tissue is impressive even though not decisive. Translating this into policy terms in considering the more contemporary effects of radiation, it would be wise to regard a large number of small doses as equivalent to a small number of large doses.

It is perhaps a macabre commentary that the scale and extent of man-made radiations through medical usages might have gone unnoticed, or at any rate unestimated, but for the follow-up of the medical results of the tactical exercise with fission bombs at Nagasaki and Hiroshima revealing the increased leukæmia rate with exposure. This was confirmed by researches on the occurrence among radiologists and among those treated for ankylosing spondylitis.

NUCLEAR FISSION

We now turn to the hazards from radioactive substances produced as a result of nuclear fission, and attention centres around strontium-90 which has a half-life of 28 years. Briefly, the concern arises from the fact that strontium, like radium and calcium, is retained in the body and deposited in the bones, where it will give rise directly to malignant bone tumours and, by irradiation, to aplastic anæmia and leukæmia. These general facts are not in dispute, but the *extent* of the damage, especially in young animals where deposition is rapid, is difficult to assess. Nor are the dangers exhausted by strontium-90. There is also iodine-131 which, though having a half-life of only a few days, is rapidly concentrated in the thyroid.

Although in these reports there are strong recommendations for immediate research on the absorption and distribution of radioactive substances, none the less the conclusions are more optimistic than the actual information seems to warrant.

THE W.H.O. REPORT

Even when all general conclusions have been literally squeezed out of existing knowledge, it is quite clear from these reports that our ignorance is pitiable. The extension of knowledge from the genetics of other species to man, the inference of mutation rates in man from indirect evidence, and the assumptions made in using the hospital records on ankylosing spondylitis, reveal that man has mastered the release of atomic energy long before he has the knowledge to assess its biological consequences. And, from our past history, dare we hope that knowledge on the consequences will be pursued with the same relentless purposiveness as that of the release of energy? When there is such a purposiveness we shall not be lacking a programme as is shown by the recently published report of the WHO study group[3]. This is a salutary document, and should be followed by more on the other aspects.

The report falls into two parts: a short and concise statement by the group as a whole, and twelve papers by some members of the group, the

latter embracing the greater bulk of the report. In spite of attempts to simplify the exposition the report makes difficult reading, especially the individual papers. It is to be hoped that those responsible for teaching will take the advice of the authors of this report and reassess the place of genetics in the training of the medical student and in postgraduate and refresher courses. The report of the group details the fields for research, and makes some general observations on the logistics of the development of an adequate research programme.

FUTURE RESEARCH

The group lists thirteen fields for future investigation and research. Not only do these projects cover an immense range, they also pose many intractable problems both of methodology and of administration for the accumulation of accurate and relevant data. Clearly in all this there must be some priorities and the suggested programme on twins should not come high on the list. Two of the more important projects are 'Manner of gene action' and 'Determination of the frequency of disease with a significant genetic component with particular reference to their epidemiology'.The common disease, diabetes mellitus, would be considered under both those headings. Even though it has been recognized in general terms for at least thirty years, the position is still very obscure. This is no reflection upon the competence of those research workers who have attempted its elucidation with the best means at their disposal. It will be necessary to institute a careful follow-up study of at least two generations in which the clinicians participating will need a fuller understanding of genetic problems than they possess at the present time.

The short paper by Stevenson is starkly pessimistic about the possibilities of measuring the genetic effects of man-made radiation with any modest degree of reliability, thus questioning one of the central features of current endeavour. It would seem that effort might be better spent on assessing (as distinct from precise measurement) the extent and impact of all gene-determined illness in the population.

CONCLUSION

The busy clinician and practitioner is thus left with little guidance, and the best advice is that he should be very reluctant to add to the natural background radiation, thus carrying out the recommendation of the First International Congress of Human Genetics. And at the end of the day his best guidance derives from the *mores* of the profession which teach that every life is sacred.

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THE CONTROL OF OBESITY WITH 'PRELUDIN'

By R. C. F. SMITH, M.D., D.P.H.
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WHILST the majority of obese patients respond well to a slimming diet, there is always a certain number who either do not respond satisfactorily or who find the effort of adhering to the requisite diet such that life becomes wellnigh unbearable. For this minority, 'preludin' may well become the drug of choice and allow them to remain at or near a reasonable weight for their height and age without too drastic a reduction in their calorie intake.

MODE OF ACTION

'Preludin' is a derivative of ephedrine and achieves its therapeutic effect in obesity by its action on the appetite-satiety centre in the hypothalamus. In other words, it does not destroy the appetite, but produces a feeling of satiety. It has no effect on gastric secretion. Paradoxically, it sometimes improves the appetite in normal and underweight individuals, and for this reason has been used in convalescence. One of its advantages is that it can be used with safety for weight reduction in patients with hypertension, heart failure, and diabetes mellitus.

SCOPE OF INVESTIGATION

Since November 1955, I have used 'preludin' in the treatment of 21 obese patients, who were 28 to 84 lb. (12.5 to 38 kg.) overweight. The usual dose was 2 to 4 tablets (each tablet contains 25 mg.) daily, but on occasion the daily dose was increased to 6 tablets. A minority who did not reduce sufficiently on 'preludin' alone did so when this was combined with a 1,300 calorie diet; there were no symptoms of depression, lassitude or irritability.

RESULTS

In all but one patient a satisfactory fall in weight has been obtained and maintained. The exception was a patient in whom 'preludin' stimulated the appetite. The average duration of treatment was four months. No serious side-effects were encountered. Eight patients complained of abdominal distension for about a week, and tachycardia occurred in one during the first five days of treatment.

CONCLUSION

'Preludin' is a valuable agent in weight reduction in obese patients who either do not respond satisfactorily to a reducing diet or who find it difficult to adhere to such a diet.

I wish to express my thanks to Messrs. Pfizer Pharmaceuticals for kindly supplying the 'preludin' for this investigation.

GENERAL PRACTITIONERS' FORUM

HYPERTENSION IN GENERAL PRACTICE

By PHILIP HOPKINS, M.R.C.S., L.R.C.P.

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'To the physician who desires to be a practical man, a knowledge of the causes of disease is the most precious of his craft . . . '—Sir Clifford Allbutt, 1877.

HYPERTENSION is not a disease, it is the physical finding that the patient's blood pressure is raised above certain arbitrary 'normal limits'. As the causes of hypertension are many and varied it is of fundamental importance that they should be elicited in each individual case so that the appropriate treatment may be instituted where possible for the causes rather than for their effect.

SCOPE OF INVESTIGATION

This study is based on the case records of one hundred patients with hypertension seen consecutively in general practice since 1950. Only those patients whose condition is known at the time of writing have been included in this series. The practice is centred on a part of London where all social classes are represented. Patients are seen either under the National Health Service or by private arrangement, full records being kept for all patients so that the series analysed here consists of both National Health Service and private patients.

Sex	Age 15–		Age 45–		Age 65–		All Ages
	No.	%	No.	%	No.	%	
Female	3	4.4	21	30.4	45	65.2	69
Male	5	16.1	12	38.7	14	45.2	31
Totals	8		33		59		100

TABLE I.—Age and sex incidence in 100 hypertensive patients.

There are 69 women and 31 men in this series, and only 8 per cent. of them were under 45 years old when first seen. The rise in incidence as the age-groups advance is as expected (table I), but it is interesting to note that there is a difference of statistical significance in the higher proportion of males under 45 years with hypertension.

SYMPTOMATOLOGY

Table II shows the frequency of symptoms in the two sexes. In the first

place it is interesting to note that in 14 per cent. of the patients the hypertension was discovered during a routine medical examination (table III) and they complained of no symptoms—with the exception of one patient who had bronchitis, and one who was suffering from hæmorrhoids.

Symptom	Female	Male	Total
Anginal pain	9	4	13
Anxiety	18	11	29
'Choking feelings'	3	–	3
Cough	2	5	7
Depression	17	2	19
Dyspnœa	23	15	38
Epistaxis	1	1	2
'Giddy (or dizzy) turns'	15	8	23
Headache	8	7	15
Hemiplegia	7	2	9
Indigestion	7	4	11
Insomnia	23	7	30
Mental confusion	2	3	5
Obesity	19	9	28
Palpitations	6	–	6
'Shaky feelings'	9	3	12
Swelling of ankles	5	3	8
Tinnitus	2	–	2
'Tired all the time'	3	1	4
Vision deteriorating	1	–	1
No symptoms	12	2	14

TABLE II.—Showing the frequency of symptoms in 100 patients with hypertension seen in general practice.

It now seems to be generally agreed that hypertension does not in itself produce symptoms (Lewis, 1937; Wood, 1956) and it certainly does not indicate that life will necessarily be cut short. Table III shows the present

Sex	Present age	Year seen	Blood pressure (mm. Hg)	Medical examination for	Present condition
F	76	1950	215/115	Routine	Well—no symptoms
F	72	1950	195/105	Routine	" " "
F	76	1951	200/100	Routine	" " "
F	78	1951	240/110	Routine	" " "
F	70	1951	170/100	Acute bronchitis	" " "
F	50	1951	200/100	Hæmorrhoids	" " "
F	88	1952	190/110	Routine	" " "
F	74	1952	200/100	Routine	" " "
F	93	1953	210/100	Routine	" " "
F	82	1954	210/105	Routine	" " "
F	84	1955	210/105	Routine	" " "
F	75	1956	200/100	Routine	" " "
M	35	1955	190/110	Insurance	" " "
M	43	1955	180/100	Insurance	" " "

TABLE III.—Blood pressure, present age and condition of 14 patients in whom hypertension was originally discovered on routine examination.

age of the 14 patients whose hypertension was discovered at routine medical examination, together with the reason for the examination and the year in which it was done. The blood pressures and patients' present condition are

also given. It is worth adding that out of forty elderly ladies admitted to a London County Council old age home, only four were found to have a blood pressure below 145/90 mm. Hg: 21 of these ladies were between 60 and 80 years old, 18 were between 80 and 90 and one was 90 with a blood pressure of 210/100 in 1953 and is still well and symptom free at 93.

Analysis of the remaining 86 patients shows that they may be divided into two main groups:—

(1) Clinical evidence of arteriosclerosis (36).

(2) Those with obvious psychoneurotic disturbance and no physical abnormality found other than the raised blood pressure (37).

A third small group remains in which two had evidence of renal damage, and the remainder (11) had various other illnesses which overshadowed the hypertension. Study of the two main groups reveals a marked difference in the pattern of their symptomatology and this is shown in table IV.

Symptoms	Percentage incidence of symptoms					
	Arteriosclerotic group (36)			Psychoneurotic group (37)		
	F.	M.	Total	F.	M.	Total
Anginal pain	8.2	11.2	19.4	13.5	2.7	16.2
Anxiety	11.2	8.2	19.4	43.2	1.9	45.1
'Choking feelings'	2.8	—	2.8	3.8	—	3.8
Cough	5.6	5.6	11.2	—	5.4	5.4
Depression	8.2	—	8.2	29.7	2.7	32.4
Dyspnœa	28.9	16.3	45.2	18.9	2.7	21.6
Epistaxis	5.6	—	5.6	—	—	—
'Giddy feelings'	13.6	5.6	19.2	18.9	2.7	21.6
Headaches	2.8	2.8	5.6	16.2	13.5	29.7
Hemiplegia	21.7	5.6	27.3	—	—	—
Indigestion	5.6	—	5.6	8.1	10.8	18.9
Insomnia	8.2	—	8.2	48.6	13.5	62.1
Mental confusion	8.2	5.6	13.8	—	—	—
Obesity	13.6	8.2	21.8	21.6	10.8	32.4
Palpitations	2.8	—	2.8	8.1	—	8.1
'Shaky feelings'	2.8	5.6	8.4	21.6	—	21.6
Swelling of ankles	5.6	2.8	8.4	8.1	—	8.1
Tinnitus	—	—	—	5.4	—	5.4
'Tired all the time'	—	—	—	10.8	2.7	13.5
Vision deteriorating	2.8	—	2.8	—	—	—

TABLE IV.—Showing the percentage of incidence of symptoms in the arteriosclerotic and psychoneurotic groups.

As might be expected, certain symptoms occur only in arteriosclerotic hypertensives and are due to the structural changes. On the other hand, there is overlap of symptomatology, and every indication that many of the older arteriosclerotic patients have also had previous chronic psychoneurotic disturbances.

It is interesting to consider some of the symptoms which have been accepted for the first half of this century as being caused by hypertension. Most textbooks place headache as a leading symptom, and the authors of many reports on the treatment of hypertension have used the alleviation of

symptoms, including headache, as the criterion of success. In my experience I have found no significant relationship between hypertension and headache, and in the present series only 15 per cent. complained of headache. It is interesting to note that the majority of them were in the psychoneurotic group; 29.7 per cent. of this group complained of headache, compared with 5.6 per cent. of the arteriosclerotic group. This is in keeping with Stewart's (1953) conclusion, following the examination of 200 severe hypertensives and a number of controls, that 'the headache that so often accompanies hypertension is usually a product of anxiety'.

Various subjective symptoms are often given as due to hypertension but in the present series such symptoms as 'shaky feelings', 'always feeling tired', anxiety or depression occurred far more frequently in the psychoneurotic group. Although 'giddy (or dizzy) feelings' were of similar frequency in the two groups, there was usually an accompanying loss of the sense of balance in the arteriosclerotic patient, due to cerebral arteriosclerosis, whereas in the psychoneurotic group the giddiness was associated in most cases with added 'faint feelings' or other anxiety symptoms, and on clinical examination no interference with the sense of balance was demonstrable.

Twenty-eight per cent. of the series were obese, the incidence being higher in the psychoneurotic group, and in a number of them I found a strong compulsive need for oral satisfaction, symptomatic of a severe emotional disturbance that could well be the common cause for both the obesity and the hypertension.

Some symptoms, such as mental confusion and hemiplegia, are undoubtedly due to structural changes interfering with the blood supply to the brain and these occurred only in the arteriosclerotic group. Other symptoms, such as dyspnœa and anginal pain, also caused by structural changes, occur in both groups, however, and it requires considerable patience to find out exactly what the patient means when he states that he gets breathless or has pain in the chest. There is no mistaking the description of true angina but the psychoneurotic with chest pain can be misleading unless the possibility is considered. Many of the patients in this series were referred to consultants for radiological investigations, electrocardiograms and electroencephalograms, and, as might be expected, the majority of abnormal reports related to patients in the arteriosclerotic group.

DIAGNOSIS

The multiplicity of symptoms, together with the way in which they are described, is often the first clue to the diagnosis, which can usually be confirmed after a full history has been taken and the patient seen in the true perspective of his life-situation. In this context it is of the utmost importance that sufficient time be allowed for the patient to express his emotional difficulties and to speak of his symptoms in relation to his troubles. Occasionally I have been able to start a discussion of the patient's problems while he is still lying on the examination couch and with the sphygmomano-

meter cuff around his arm; the rise in blood pressure when a particular topic is mentioned might well be considered as pathognomonic!

The family history is of importance in some cases since there does appear to be a tendency for hypertension to run in families. Psychoneurotic disorders in the patient's parents may also have a positive bearing on his present condition.

Full physical examination follows, with special reference to:—

(1) The state of the arteries where they are readily accessible: i.e. radial, brachial, dorsalis pedis, popliteal and temporal.
(2) The pulse—rate, rhythm, volume.
(3) The heart—sounds and size, position of apex beat.
(4) Measurement of the blood pressure.
(5) Ophthalmoscopic examination of the fundi.
(6) The condition of the central nervous system.
(7) The urine—specific gravity, presence of albumin, sugar.

In the large majority of cases the diagnosis will have been reached by now, but when there is any doubt further investigations will be required to exclude phæochromocytoma, coarctation of the aorta and unilateral pyelonephritis or cystic disease of the kidneys. Patients with severe hypertension under the age of 45 years should be admitted to hospital for full investigation.

In the present series the diagnosis most commonly made was that of severe emotional disturbance with associated hypertension; in a number of patients secondary arteriosclerotic changes had occurred so the condition was now altered by the symptoms produced as a result of the reduced blood supply to the brain and the heart.

Analysis of the symptoms in the two main groups of patients in this series shows clearly that hypertension by itself is unlikely to produce symptoms—and I would now add that in the majority of patients hypertension is itself merely a sign of underlying emotional tension.

TREATMENT

The present-day approach most commonly accepted is that treatment should be directed at the causal condition *where it can be found*. This applies mainly to certain conditions for which surgical operation is carried out to remove a diseased (unilateral) kidney, or a phæochromocytoma, or the stenosed portion of the aorta. Unfortunately, this is possible in only a small percentage of all hypertensive patients so that in the remainder treatment aims at reducing the blood pressure in those whose hypertension is due to some 'unknown' cause, and who are said to be suffering from essential hypertension.

I fully agree that treatment should be directed at underlying disease processes and can but approve of this approach in hypertension when it is due to conditions which are amenable to surgery. I would go further, however, and say that it is not sufficient to accept essential hypertension as a diagnosis and then to treat it as a disease. In this process it seems that one is losing sight of the fact that the patient is a person in need of help. I have seen patients who have had their 'blood pressure' treated by another doctor

who has been pleased with his therapeutic success in reducing it to normal limits—but they were still ill. Their hypertension might have been treated, but the patients were not touched because the underlying cause of the hypertension had not been dealt with, and they were therefore obliged to seek help from another doctor.

I believe that most patients with hypertension are in fact suffering from emotional disturbance and that this is the condition requiring treatment. Often, of course, there would be little use in attempting psychotherapy since the condition is so long standing and the patient has been conditioned into accepting that it is the 'blood pressure' that troubles him. Nevertheless, even in the older age-groups it is sometimes beneficial.

McMichael (1952) classifies essential hypertension according to clinical severity, in ascending order of gravity, as follows:—

'(1) Intermittent hypertension. Casual readings of elevated pressure are found which subside to normal with rest and reassurance.

(2) Remittent labile hypertension, which subsides to a lower but not quite normal level with rest in bed and with sleep, but which remains benign and often symptom free for many years.

(3) Hypertension which is *sustained* although it continues to show some fluctuations. (a) This sustained hypertension may be *uncomplicated* for years. (b) Sooner or later important organs become involved—brain, eye, heart—and it is a matter of chance which of these is involved first.

(4) Hypertension with severe active retinal involvement but without papillœdema. In such cases there is usually evidence of cardiac strain and/or cerebral vascular complications: the diastolic pressure has risen by then to above 120 mm. Hg, and in this group the course is usually rapid, terminating in two or three years. This is often called the *pre-malignant* phase.

(5) *Malignant* hypertension with retinitis and papillœdema (hypertensive neuroretinopathy). In this condition rapid cerebral, cardiac and *renal* involvement takes place and patients nearly always die within a year'.

Patients in the first three categories are the ones who, in my experience, are most likely to benefit from psychotherapy, and in many cases I believe they will thus be prevented from becoming members of the last two categories. In addition to psychotherapy it is also necessary to help them to cut down their activities, to advise suitable diet for the obese, to ensure adequate rest and perhaps to prescribe a mild sedative to help ease general tension. Many of these patients also require a hypnotic at night, as insomnia is commonly experienced. Above all, the words 'blood pressure' should be avoided or, if the patient already knows of the raised blood pressure, it is worth spending time in explaining that we all have 'a blood pressure' and that its level is not of much significance provided that he is under observation and treatment. It can also be pointed out to them how their emotional state may affect the blood pressure. In this way many people will readily accept help along psychotherapeutic lines.

In those patients in whom arteriosclerotic changes have occurred it may well be that attempts to reduce the blood pressure would be inadvisable, since this would interfere still more with the circulation and, indeed, I have seen this happen with resultant cerebral thrombosis. In the more advanced cases of arteriosclerosis and hypertension treatment must consist primarily

in helping the patient to adapt his way of life so that his activities are kept within the limits of his cardiovascular system. I have a number of elderly patients who live in an L.C.C. Home, and they illustrate this point very well since they are not ill although many of them have blood pressure considerably higher than the usually accepted normal limits. The important factor is that they are able to restrict their activities as become their age and certainly within the limitations set by their cardiovascular systems.

Patients in McMichael's categories 4 and 5 require treatment by whatever means are available, in order to reduce the blood pressure to levels less likely to produce further deterioration of their arterioles. Bed rest and sedatives head the list, and are necessary in the first place.

Veratrum alkaloids produce a reflex vasodilatation but, in my limited experience, their side-effects do not warrant their use in view of the small chance of their achieving the desired result. Other substances have been tried and found wanting, and I would list among these the thiocyanates, the dihydrogenated alkaloids of ergot, soluble bacterial pyrogens and the hexamethonium compounds when taken orally. Parenteral methonium treatment entails admitting the patient to hospital in the first place in order to assess his response and to stabilize the dosage. Subsequently it is necessary for the patient to learn to administer his own injections and I have had only one patient with a sufficiently severe hypertension who was also fit to do this.

Reserpine has proved to be the most useful of the various alkaloids extracted from Rauwolfia, as it is not only hypotensive but also sedative in its effects. Unfortunately it also has side-effects due to the reduced parasympathetic activity it induces, and for this reason it should not be used for patients with duodenal ulcer, ulcerative colitis and asthma. Amongst its lesser side-effects are nasal congestion, unsteadiness and sometimes restlessness. Occasionally it produces a profound depressive state. Care is therefore needed in its use, but I have found it the most useful of the hypotensive agents available at present. More recently I have tried the newer mecamylamine hydrochloride ('inversine') and the results are encouraging.

The surgical treatment of hypertension by sympathectomy or adrenalectomy is now of historic interest only, as those few patients with dangerously high hypertension may now be treated with reserpine or, in hospital, with parenteral methonium compounds.

PSYCHOTHERAPY

Sir Clifford Allbutt (1877) drew attention to the importance of emotional stress on the level of the blood pressure in a most intriguing paper entitled 'On mental anxiety as a cause of granular kidney'. He wrote: 'I have been led by the careful record of nearly 1000 new cases in each year . . . among the causes of that kind of Bright's disease known as granular kidney, mental anxiety and prolonged distress take a high, if not the chief, place'. In two years he had collected 35 cases and he gives the case histories of eight of them to illustrate his point.

Hambling (1951), in a study of 50 hypertensives with multiple symptomatology, showed that these patients characteristically had symptoms of a depressively toned anxiety state, and that they had a deep-seated character neurosis already well established in young adult life, and originating in childhood adversity. In his fifty cases the symptoms had preceded the diagnosis of hypertension, and his experience led him to conclude that the diagnosis of hypertension could be an added important adverse element.

Nineteen patients in my series were treated by psychotherapy, and in every case there was improvement in the emotional state, with some lowering of the blood pressure. As rest and sedatives were also used it is not always possible to claim that their improvement was necessarily due to the psychotherapy. My impression as the result of treating not only these nineteen patients in this series, but also many others who cannot be included here as their present-day condition is not known, is that the help patients obtain from simple psychotherapy makes it a method of treatment well worth trial. The object is to show the patient how his emotional disturbance is affecting him, and by encouraging him to express his difficulties he is helped to resolve his problems or else to adapt his way of life to fit in with them.

Some case histories will illustrate the method.

A 38-year-old housewife, with two children, complained of palpitations and shaky feelings, which had started during a violent argument with her husband. Her marriage had been unhappy for some time and, as she herself said, her 'nerves had been bad so that she couldn't sleep'. She was over-weight, and she readily admitted that eating was the only satisfaction she had in life. I saw her for a number of short sessions and encouraged her to talk out her anxiety about her marriage, and on one occasion I saw her and her husband together. Following this there was a general improvement in the marriage situation, and her blood pressure fell from a sustained 145/100 to 135/85 mm. Hg. She is still well now and, as an interesting 'side-effect' of treating the parents in this way, their elder daughter has ceased having her asthmatic attacks!

A single woman, aged 67, when she first consulted me in 1954, was housekeeper to another patient in this series who was confined to bed with herpes zoster. As a result of this the housekeeper had been working excessively hard and was much worried about her employer's condition. There was a number of symptoms, including anxiety, insomnia, palpitations, 'shaky feelings' and swelling of the ankles. Clinically I found no evidence of the latter, but I did find her to be obese, very anxious and with a blood pressure at 215/115 mm. Hg. She was unable to rest as there was nobody else to look after her employer or herself. Following a general discussion about her situation it became apparent that, apart from being genuinely upset about her employer's illness, she was also much concerned about her own future as she had no relatives and had looked upon her place of employment as her home. I was able to assure her that I would help her to find a place in a suitable home should the need arise. I prescribed a preparation of reserpine, together with a hypnotic for night time, and, although she did not rest, her blood pressure fell to 175/80 mm. Hg in six weeks, despite the fact that her employer died (of encephalomyelitis secondary to the herpes zoster). Subsequently a place was found for her in the L.C.C. Home that I visit and she remains well, with her blood pressure fluctuating between 170/80 and 180/90 mm. Hg.

A 63-year-old spinster first consulted me in February 1955, complaining of feeling depressed and unable to sleep. She had been referred by a previous doctor to a psychiatrist, but as 'he only gave me phenobarbitone' she gave up attending his clinic. Clinically she was over-weight and had a blood pressure of 190/120 mm. Hg. Over a number of sessions she was able to discuss many anxieties and eventually

described certain earlier experiences which now centred in her dreams. Gradually her depression lifted and she was able to sleep without a hypnotic at night time. Her blood pressure is now steady at 135/85 mm. Hg.

A 47-year-old civil servant first consulted me in 1950 on account of 'dizzy spells', headaches and insomnia. Clinically he was obese and hypertensive (200/110 mm. Hg). A short discussion revealed certain anxieties about his work and particularly about his chance of promotion. He was also worried about his health, having recently heard of the death of a colleague from coronary thrombosis. I reassured him about his health, but mentioned casually that his weight might be watched. He returned to see me some weeks later feeling much better: he had been promoted, his weight was steadily going down and his blood pressure was 170/100 mm. Hg. He remained well until January 1956, when he had a similar episode of acute anxiety with raised blood pressure, and again improvement followed a discussion of his life situation and the reassurance that he was physically fit.

A 41-year-old taxi-driver consulted me in June 1954, complaining of two attacks of giddiness in the preceding week; this was associated with severe 'pressing-down pain' on top of the head. He had previously been well—'in fact so well that I have been putting on weight'. Clinically he was over-weight (15 stone [95 kg.]; height 5 feet 8 inches [170 cm.]) and obviously extremely anxious and restless. His blood pressure was 210/110 mm. Hg. After a general discussion about himself, and with some reluctance, he was encouraged to talk of any worries he might have. Eventually he spoke of his marriage and the difficulties therein, and after some discussion he was able to relate this with his symptoms—and particularly the fact that he had been over-eating since a particular row with his wife. General advice was given about his diet, and I prescribed amylobarbitone, ½ grain (30 mg.) twice daily. After six months his weight was down to 12 stone 12 pounds (82 kg.) and his blood pressure to 145/85 mm. Hg. He felt 'fine' and had had no giddiness. When I last saw his wife she, too, was less anxious than I had previously known her to be, and she asked what the tablets were that I had given her husband as 'they had made him much nicer to her'!

These are but a few examples of hypertension as seen in general practice, and probably seldom seen in hospital practice except when they may be referred for investigations. In this latter eventuality it is unlikely that many consultants would have sufficient time to become fully cognisant of the patient and his possible emotional difficulties.

HYPERTENSIVE DEATHS

At the other end of the scale it is not uncommon in general practice to see the final outcome of the hypertensive who has developed arteriosclerotic changes. In this series there were 26 deaths. In only four of them was death due to a condition unconnected with arteriosclerosis: acute encephalomyelitis secondary to herpes zoster, carcinoma of the colon, lymphosarcoma, and carcinoma of the prostate. In the remaining 22 patients, death was due to cerebral hæmorrhage in nine; to cardiac failure in eight; and to coronary thrombosis in four. In one, death was due to uræmia secondary to chronic pyelonephritis.

The average age at the time of death in the women was 76 years, and in the men 71.7 years. These figures are remarkably similar to those given by Mallett (1953) who reported the average age of his hypertensive patients at the time of their death as 76.2 for women and 69.5 for men.

HYPERTENSION AND LIFE ASSURANCE

Life assurance offices still insist on a fairly rigid set of 'normal blood

pressures' so that individuals may be barred from life insurance when in fact they have a labile blood pressure. In the light of present knowledge, together with the established fact that hypertension *per se* is not a signal that life will be cut short, it would seem reasonable for a fresh attitude to be developed in this problem. In any case it is undesirable that an individual should be told that his blood pressure has been found to be too high. In two of my series this occurred, and it was no easy matter correcting the acute anxiety produced in each of them.

Occasionally in clinical practice a patient is told of the finding of a raised blood pressure, and in my experience this is responsible only for further anxiety in the patient. If it is considered that the blood pressure is dangerously high, or likely to lead to complications, a near relative should certainly be told, but it is seldom warranted to burden the patient's mind with this added cause for anxiety.

CONCLUSIONS

(1) In an analysis of 100 hypertensive patients seen in a general practice the findings support the statement that hypertension *per se* does not produce symptoms. Further support is given to Allbutt's theory of the neurogenic causation of hypertension.

(2) The causes of hypertension should be treated rather than the hypertension itself, and it is suggested that emotional disturbances form a cause for hypertension and as such should be treated by psychotherapy in addition to the use of rest, sedatives and/or hypotensive agents, if the latter are really considered necessary.

(3) A brief discussion of the various hypotensive agents is included, and a preference stated for reserpine.

(4) A number of case histories are given to illustrate the use of psychotherapy in the treatment of the hypertensive psychoneurotic patient. The use of any one single method of treatment in general practice to the exclusion of all others is difficult so that it is not possible to assess the value of psychotherapy in this way; nevertheless it is my impression that patients respond better when it is used.

(5) The late effects of hypertension are described, and the causes of death in 26 patients discussed.

(6) A plea is made for patients to be spared the added anxiety of knowing that their blood pressure is raised, and the need for a review of the significance of hypertension in Life Assurance is pointed out.

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HEARTBURN IN RELATION TO TOXÆMIA OF PREGNANCY

By MERVYN GOODMAN, M.R.C.S., L.R.C.P., D.Obst.R.C.O.G.
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Pre-eclamptic toxæmia remains the biggest problem of antenatal care. In Liverpool, in 1951, 8.5 per cent. of primigravidæ and 4.2 per cent. of multigravidæ developed toxæmia (Gemmell *et al.*, 1954) and the College of General Practitioners (1957) report an incidence of hypertension in pregnancy of 16 per cent. in primigravidæ and 9 per cent. in multigravidæ, with an over-all incidence of about 11 per cent. These figures are important in that they are the first attempts to assess the incidence of toxæmia in patients booked for home, as well as hospital, confinement. In the years, 1952-54 (Report, 1957), there were 246 maternal deaths, nearly one-quarter of the total maternal deaths, due to toxæmia.

The incidence of toxæmia has been considerably reduced by regular antenatal examination, of which estimation of the blood pressure, testing for albuminuria and looking for pre-tibial and ankle œdema form the basic triad. Weighing the patient is also carried out in many clinics but, unless this is carried out accurately, the time spent on it is wasted. Theobald (1955) recommends weekly examination of the patient from the twenty-fourth week of pregnancy onwards and by elaborate organization has developed a system whereby the patient is only in the hospital for about ten minutes. The routine adopted does not include an abdominal examination except on four or five of the visits; to some patients abdominal examination forms the *raison d'être* of their attendance and its absence may prove somewhat puzzling.

SCOPE OF INVESTIGATION

The success of a salt-free diet in the active treatment of established toxæmia suggested that avoiding an excessive salt intake might decrease the incidence of toxæmia, and in this article I report cases in which heartburn in pregnancy has been so treated.

Heartburn is a common symptom of late pregnancy. Rodway and Shelley (1935) and Woolven (1957) estimate that approximately two-thirds of all pregnant women experience heartburn. Two types of heartburn can be differentiated: a nocturnal type and a diurnal type. Nocturnal heartburn closely resembles the symptomatology of a hiatus hernia and can be alleviated by taking a light snack at night, before retiring, and by sleeping well propped up in bed. The diurnal type may prove much more difficult to treat.

In the present investigation treatment was planned to exclude the use of sodium ions. The *British National Formulary* 1957 magnesium trisilicate mixture B.P.C. is commonly prescribed for heartburn. This preparation contains 10 grains (0.6 g.) of sodium bicarbonate per dose or, if prescribed

three times a day, 30 grains (2 g.) a day. This is equivalent to 20 grains (1.3 g.) of sodium chloride a day. The average daily intake of salt a day is 150 grains (10 g.), of which 60 grains (4 g.) are added at the table. Prescribing this preparation therefore adds 13 per cent. to the sodium intake of a patient on a normal diet and 21 per cent. to the sodium intake of a patient on a restricted salt diet. Patients who treat their heartburn themselves may buy tablets or powders containing as much as 48 per cent. sodium bicarbonate, or they may take pure sodium bicarbonate powder. It is surprising that Browne and McClure Browne (1955) advocate the use of soda mint tablets (compound tablets of sodium bicarbonate B.P.) in the treatment of heartburn of pregnancy.

The treatment adopted in this investigation was to prescribe a mixture containing 15 grains (1 g.) of magnesium trisilicate and light magnesium carbonate made up to half-an-ounce (14 ml.) with peppermint water. Tablets of aluminium hydroxide B.P.C. were given in addition if the symptoms persisted and only the resistant cases were treated with proprietary preparations (e.g. 'prodexin'). Patients who were booked to be confined in hospital were referred back to the hospital clinic at about the 34th or 36th week. They were told that they could still attend my clinic, as well, should they wish or should any untoward symptom occur between their weekly visit to the hospital. Those patients who had already experienced heartburn were given a supply of medicine sufficient to last throughout the duration of the pregnancy.

RESULTS

One hundred consecutive pregnancies which have gone to term during a period of twenty months have been analysed: 73 of these women were delivered in hospital and the remaining 27 were delivered at home. Just over one-third (38 per cent.) were primiparæ and there were two twin pregnancies in the series. The criteria for toxæmia have been taken as a blood pressure of 140/90 mm. Hg, or higher, with or without œdema or albuminuria. Patients presenting with œdema alone were put on a salt-restricted regime and some were given tablets of phenobarbitone B.P., ¼ grain (16 mg.) thrice daily.

Three patients developed toxæmia: all primigravidæ booked for hospital confinement. Neither of the twin pregnancies developed toxæmia. Of these three cases, two patients have since been delivered of their second child and in neither case did the toxæmia recur. All three patients experienced heartburn during their pregnancy, two patients did not consider it worth while mentioning their symptoms and 'treated' themselves, the third took additional preparations to those which had been prescribed. These cases occurred in the first six months of the series when treatment was being prescribed only to those patients who complained of heartburn; subsequently, during the past fourteen months, patients have been asked whether they are experiencing heartburn and they are warned to seek medical advice

before taking anything to alleviate it. It has been a general policy to warn patients of the dangers of taking any patent or proprietary preparation during pregnancy without a doctor's advice.

CONCLUSION

Although the series is too small to justify dogmatic statements, it would appear from the results obtained that, by avoiding drugs which contain sodium ions, the incidence of toxæmia of pregnancy can be considerably reduced.

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FEAR AND GLAUCOMA

By J. E. MARTIN, M.B., Ch.B.
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The recent publication of the Ministry of Health 'Memorandum on the prevention and alleviation of blindness' (1958) prompts me to draw attention to an aspect of glaucoma which never seems to have received adequate attention.

WARTIME EXPERIENCE

Following the German occupation of the Channel Islands I was impressed by the disproportionately large number of cases of simple glaucoma which I was asked to see, some of them in a much younger age-group than usual. In addition, many of them had progressed to a late stage of the disease before being first seen. After one or two attendances, and having gained their confidence, these patients volunteered a history of protracted distressing anxieties which seemed to be much more vivid and terrifying than those of patients with other eye conditions who were being seen at the same time. There had been ample grounds for apprehension in those days when one's house might be raided any time by brutalized German slave worker prisoners or German troops, or the postman's knock might mean a summons for some alleged offence. Punishments under martial law are intended to be severe, and

in the Channel Islands they were. Particularly terrifying to the islanders was the risk of punishment by deportation to the unknown—possibly a German concentration camp.

DISCUSSION

I gained the impression that this long-continued apprehension or fear might be a contributory factor in the onset of the increased number of cases of glaucoma which I saw. Unfortunately, I did not see sufficient cases to collect data of real significance. nor were conditions propitious for a carefully planned investigation. I report my observations now, however, because I feel that by bearing this possibility in mind, family doctors may be able to make a useful contribution towards the solution of one of the important clinical problems of the day.

According to the Ministry of Health memorandum, the etiology of glaucoma 'remains obscure', but treatment in the early stages offers considerable hope in prevention of its progress. Effective treatment is said to depend 'almost entirely upon early referral by the family doctor since it is to him that the patient usually first reports his symptoms, *if he reports them at all*' (the italics are mine). The diagnostic problem here is, to quote the memorandum again, that simple glaucoma 'may be accompanied by no clamant symptoms of any kind'.

In favour of my hypothesis that fear is of significance in the etiology of glaucoma I would draw attention to Duke-Elder's (1954) statement that acute glaucoma is 'seen particularly in those who are highly strung, anxious in disposition, and sympathicotonic in type'.

SUMMARY

My thesis therefore is that family doctors could do much to cope with the problem of glaucoma if they realized that long anxiety may also be a precipitating factor. Simple glaucoma is insidious in onset. The patient is unaware of it until the condition is established and advanced, the degree of nerve atrophy reached is irreversible and no drug, ancient or modern, has any effect.

The only practical method of early diagnosis is the routine examination by a competent ophthalmologist of persons over the age of 50 years every four years. Let us not, however, overlook other contributing factors: the small hypermetropic eye, small cornea, shallow anterior chamber, swelling cataract, and mydriasis due to misuse of atropine, unnoticeable low-grade iridocyclitis, and the patient who will get simple glaucoma irrespective of the ophthalmological findings.

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SECTION OF GENERAL PRACTICE OF THE

ROYAL SOCIETY OF MEDICINE

DISCUSSION ON EMERGENCIES IN GENERAL PRACTICE

February 19, 1958

Dr. R. M. McGregor (*Hawick, Roxburghshire*).—Surgical emergencies in general practice is the problem with which I have been asked to deal and I propose to discuss the surgical conditions that I have encountered in the cottage hospital with which I am associated.

GENERAL PRACTITIONER SURGERY

In this practice most surgical procedures are carried out at the cottage hospital. The analysis of my in- and out-patients will give a comprehensive picture of the surgical conditions I encounter. It is not the complete picture since a few cases are sent direct to larger hospitals where facilities are greater.

OUTPATIENTS

During the five years, 1952-57, 477 patients received treatment as outpatients for conditions which were of a surgical nature. Table I shows them in their order of frequency. Ten of these cases were transferred to larger hospitals. The remainder of the cases were a personal responsibility. Wounds of varying severity were the most common condition. The hands and wrists (43 cases) were the regions most often affected. The need for a good æsthetic result made wounds of the face the most troublesome. In sprains and strains (75 cases) invalidism can be of considerable duration in the shoulder region if ligamentous structures are severely damaged. In athletic and adipose patients the knee and ankle regions can also be tardy. Recovery is often accelerated with the assurance given by a negative x-ray. The outlook on septic conditions has been completely altered by the introduction of the sulphonamides and antibiotics. Strains resistant to penicillin have not been encountered to any great extent, possibly due to the fact that large doses of penicillin were always used. The early use of large doses of penicillin immediately a finger became painful, following a prick with a needle or pin, or when the breast of a nursing mother showed an area of localized tenderness, often seemed to prevent serious infection.

The remainder of the conditions treated in the outpatient department reflect the pleasure of doing odd jobs: the shelling out of sebaceous cysts, the catching of a good crop of nasal polypi, and the removal of a large variety of foreign bodies from every conceivable orifice give variety to a day's work.

Table II shows the fractures and dislocations. In five cases the severity was such that they were sent to a larger hospital. It is understandable that upper limb lesions were the most frequent when treatment was being given to outpatients.

INPATIENTS

Patients were admitted for observation and diagnosis as well as for treatment. The diagnosis was a personal responsibility but the treatment was often

Conditions	No. of cases	
		Transferred
Wounds	90	3
Fractures and dislocations	77	5
Sprains and strains	75	
Septic conditions	65	
Cysts and warts	43	
Varicose conditions	43	
Nasal conditions	21	
Removal of foreign bodies	15	1
Joint conditions	12	
Dental extractions	12	
Burns and scalds	10	
Gynæcological conditions	7	
Urinary conditions	6	
Appendicitis	1	1
Total	477	10

TABLE I.—Surgical outpatients seen in a cottage hospital, 1952-57.

carried out by the visiting specialists. During the nine years, 1948-57, 546 patients whose condition was of a surgical nature were admitted under my care. Table III shows these conditions in order of frequency. Since

Fractures of upper limbs:		Fractures of lower limbs:	
Colles' fracture	28	Pott's fracture	8
Carpus and metacarpus	16	Tarsus and metatarsus	3
Humerus	4	Tibial shaft	1
Radius and ulna	4	Femur	1
Clavicle	2	Patella	1
Phalanges	1	Fractures of ribs	3
Olecranon	1	Dislocations	4

TABLE II.—Analysis of 77 orthopædic outpatients seen in a cottage hospital, 1952-57.

orthopædic and gynæcological conditions top the list and contain most of the emergencies they are given in greater detail in separate tables.

The ear, nose and throat conditions are no longer the cause of urgent emergencies. There were 51 tonsillectomies performed by the visiting consultant. The septic conditions varied from infections of the hand to ischio-rectal abscesses. Three cases were real emergencies since they were suffering from acute osteomyelitis. A high fever in a young person complaining of pain in a limb requires a blood culture. Penicillin should then be administered in large doses at frequent intervals without waiting for the result of the culture. The continuing of penicillin injections for some 21

days can be very trying for a young person. The cases of cancer were an exercise in diagnosis; some had already had treatment and were admitted because of the development of secondaries. Others received their operative treatment from the visiting surgeon. Twelve were sent to a larger hospital because of the need of extensive surgery. The varicose conditions included 13 cases of hæmorrhoidectomy performed by the visiting surgeon.

The peptic ulcers included four patients with a localized perforation

Conditions	No. of cases	
		Transferred
Orthopædic conditions	117	13
Gynæcological conditions	114	
Ear, nose and throat conditions	63	1
Hernia and hydrocele	42	
Septic conditions	38	1
Cancer	33	12
Varicose veins, ulcers and hæmorrhoids	30	
Peptic ulcers	28	3
Genito-urinary diseases	26	3
Diseases of appendix, gall-bladder and pylorus	23	3
Cuts and bruises	17	
Cysts, lipoma, bursæ, etc.	8	
Dental extractions	4	
Burns and scalds	3	1
Total	546	37

TABLE III.—Surgical inpatients treated in a cottage hospital, 1948-57.

treated by conservative means. The three patients transferred were thought to need gastrectomy. Two of the patients had severe hæmatemesis and were given blood transfusions. Among the genito-urinary conditions there were

Treated by gynæcologist	No. of cases	Treated by general practitioner	No. of cases
Uterine prolapse	18	Dilatation and curettage	47
Hysterectomy	5	Abortion	24
Ovarian cyst	3	Salpingography	9
Sterilization	1	Salpingitis	1
Gilliam operation	1	Removal of pessary	1
Perforated uterus	1	Ante-partum hæmorrhage	1
Uterine polypi	1		
Recto-vaginal fistula	1		
Total	31	Total	83

TABLE IV.—Gynæcological inpatients seen in a cottage hospital, 1948-57.

ten cases of urethral caruncle in the female. This is a condition which is often overlooked as a cause of much discomfort in the female. They were all treated by the electrocautery. Diseases of the appendix were in the province of the visiting surgeon: 15 were interval appendicectomies. One case of pyloric stenosis required operative treatment. The cuts and bruises were conditions of some severity which I preferred to treat as inpatients, whilst

the cysts, lipoma and bursæ indicate an enthusiasm for doing odd jobs. Burns and scalds were conspicuous by their infrequency. One was very severe and was transferred for skin grafting after the initial shock was averted.

The visiting orthopædic surgeons do outpatient sessions only but willingly give advice on any cases when one has elected to be responsible for the treatment. Of the 117 cases treated in hospital, 83 were fractures and the lower limb required more admissions owing to the difficulties of navigation. Ten of the cases of fracture of the femur were of the surgical neck. Twenty-one of the orthopædic cases consisted of hammer toes, hallux valgus and exostosis which gave pleasure to remove or rectify.

Table IV shows the gynæcological conditions: 31 of these received their treatment from the visiting gynæcologist. The remainder were a personal responsibility. In 47 cases dilatation and curettage was carried out: in three for dysmenorrhœa. The remainder were cases of abnormal bleeding at the menopausal age. This was to ensure that no cancer was being missed, and a cervical smear accompanied the uterine scrapings for pathological examination. No latent cancer was discovered in this series. The 24 cases of abortion probably caused the greatest anxiety among the emergencies. Here the giving of blood transfusions was the rule rather than the exception. The nine cases of salpingography represent my interest in sterility. This measure is not only useful as a diagnostic measure but is also of therapeutic value. Of these nine patients, four became pregnant and five healthy children have been produced.

These are the majority of the surgical conditions which have been encountered in one general practice. This paper may not add to medical knowledge but I hope that it does show that the family doctor still practises medicine and even performs some useful surgery.

Dr. J. Guy Ollerenshaw (*Skipton, Yorkshire*).—Much that has been written about medical emergencies describes the condition when the patient has been removed from the smoke-screen created by anxious relatives. I propose, however, to concentrate on an earlier stage, examining the way in which emergencies are first presented to the practitioner including those which never reach hospital and, while drawing attention to the true nature of such cases, attempt a classification of them.

DEFINITION

The definition of a medical emergency in general practice which I have adopted is: 'A medical situation which calls for the practitioner to take some immediate action when it is presented to him'. Because of the nature of general practice it will be shown that this definition covers many more cases than would fall into this category in consultant practice, which is the angle from which emergencies are most often described.

CLASSIFICATION

The recognition of a medical emergency in general practice depends upon

one or more reactions to some deviation from the normal. These are:—

(1) The reaction of the patient.

(2) The reaction of the relatives or friends.

(3) The reaction of the doctor.

If none of these reactions is present the condition is not presented to the doctor and so is not a medical emergency by our definition. The baby found dead in his cot who is shown at necropsy to have acute bronchiolitis which must have been present at least several hours before, but which had failed to evoke the reaction of alarm in anyone, is an example of such a case. I mention this to emphasize the fact that a medical emergency, far from presenting in a dramatic form, can be so quiet as to pass unnoticed. At the other extreme is the case in which all three reactions are present. The message from an agitated wife saying that her husband has just come to bed and is fighting for breath and begging for the doctor raises the suspicion of cardiac asthma in the physician and so adds the third reaction to the two already present.

In type (1) it is only the patient who is reacting to the event as an emergency. A man rings up and says 'My wife says she is choking and insists that I call you. She doesn't look ill to me but she's all worked up and I'd be glad if you would call'. He is not alarmed nor is the doctor who thinks of globus hystericus but it is an emergency to the patient who is demanding immediate action. Not in all cases in this group does the emergency lie solely in the mind of the patient. Cerebral vascular accidents in known neurotics, for example, sometimes present in this way. In type (2) it is only the relative who is alarmed, as when a simple urticaria almost closes a baby's eyes and a frightened mother calls for an immediate visit from an unperturbed doctor. In type (3) only the doctor realizes the seriousness of the condition, as when an apologetic wife, disobeying her husband's wishes, asks for a word of advice because 'he can't shift the wind and says his left arm is aching'.

Fortunately all three reactions are usually provoked in the most serious conditions, such as poliomyelitis with paralysis, hæmoptysis and hæmatemesis. In cerebral vascular lesions, epileptic fits and the comas, the unconsciousness of the patient is a silent reaction, more effective than any vocal complaint. The same may be said of the more serious mental diseases, when sudden alteration in the patient's behaviour is the form his reaction takes. Any or all of the reactions may be modified by circumstances. For example, the reaction of both relative and doctor may be inhibited when an emergency occurs in the course of an epidemic having somewhat similar symptoms. The amount of anxiety in the mind of the caller is all that can be at all accurately assessed over the telephone, unless the doctor himself answers the call, although a trained secretary can ask simple questions which will elicit valuable objective evidence. Crude though it is, much depends upon this assessment of the call, and errors of judgment at this stage can result in, at best, dislocation of the doctor's work or, at worst, in delay in

visiting an emergency, with consequences which may be grave. A second message coming within two hours of the first is usually an indication for hurry.

The emergency presenting at a routine surgery consultation usually belongs to the third type. Its recognition depends solely upon the reaction of the doctor, who is not alerted by alarm in patient or relative. A succession of commonplace disorders passing before him and a tendency to think of a medical emergency as a dramatic event to which one is summoned, also contributes to the formation of a 'blind spot', as a result of which the medical emergency might well be left out of the differential diagnosis. The abbreviated history and 'directed' examination, which the weight of numbers to be seen imposes on the general practitioner, also play their part in the missed diagnosis in the course of a surgery. Even less dramatic but, in my view, a true emergency, is the moment when a neurotic patient lets fall a remark which hints at the nature of the underlying anxiety, which he has been covering up perhaps for years. If this moment of revelation is allowed to pass, easy access to the problem may be lost.

The reaction of the relatives is useful in bringing medical help to the patient but may form part of a 'chain reaction'. Seeing their alarm, the patient has the symptoms and signs of fear added to his original complaint. Impressed by the resulting picture, the doctor sends the patient to hospital, where these added signs disappear and the patient is discharged next day. In the home an emergency had existed, but the factors comprising it had not been correctly evaluated. As seen in general practice, a medical emergency is an event which disturbs the pattern of home life and in addition to the patient the total situation needs treatment by the family doctor. The family's sense of security has been shaken and the suffering of its members is very real. It merits the doctor's attention, not merely because its alleviation will help him to deal with the patient, but for its own sake. Cheerfulness, patient explanation, practical advice and some indication of what is likely to happen next, coming from the doctor, is a better tranquillizer than the expensive drugs which bear that name.

Truth does not always hide at the bottom of a well. It is sometimes missed because it stands alongside other truths, so obvious that they receive only a cursory glance.

CONCLUSION

This paper has directed attention to these obvious truths:—

(1) Emergencies can happen at any time in any place and to any person.

(2) In general practice a medical emergency presents not as a single problem, but as a complex, in which the part played by relatives may help to clarify or to obscure the central event.

(3) Serious organic disease is not a necessary component of a medical emergency in general practice.

(4) Treatment has to be directed not to the patient alone, but to the total situation which surrounds him.

MURDER OF A VILLAGE DOCTOR

A TRUE STORY

By HILTON FRIARS

In one of the quaint, narrow streets which climb up from the cobbled market square at Grassington (fig. 1), in Wharfedale, there is a tiny shop whose tom-thumb window displays temptingly polished fruit and fresh vegetables (fig. 2). About 200 years ago this shop was the village smithy, owned by the notorious thief and quarrelsome bully, Tom Lee, who also kept the Blue Anchor Inn. He never appeared to work very hard but always had a fair amount of money. Many villagers suspected him of being responsible for the numerous burglaries which had taken place, but no-one could prove anything against him: except one person, the respected and popular Dr. Petty, who visited his patients on horseback to the ends of Wharfedale. Tom Lee had on occasion found it necessary to visit Dr. Petty himself for treatment of his more dangerous wounds, which were the outcome of his thieving expeditions. Recently he had had to resort to Dr. Petty when his life was jeopardized by wounds from bullets fired by a miner deputed to carry the weekly wages to the mines. Tom coveted the money and, in disguise, waylaid and attacked the miner who, however, was a little too smart for him. After peppering Tom with bullets he got safely away with the money.

THE THREAT

One day towards the end of the year 1765, Dr. Petty was on his customary rounds and reined in to take some refreshment and have his horse fed at the Angler's Inn at Kilnsey, a mile or two from Grassington. On entering, he heard loud angry voices and found Tom Lee and Dick Linton, a farmer in the neighbourhood who was rather fond of his glass, staring angrily at one another and warming for a fight. Tom had been taunting Dick about his poverty. Dick retorted peevishly that if he was poor at least he was honest, which brought Tom immediately to his feet. 'What does thou mean?' he demanded with quivering lips. Dick's blood was up now too. 'Why, who brack into John Jessop's house and stole three hams?' He glared at Tom accusingly.

Tom moved threateningly towards Dick: 'I'll smash every bone i' thy body . . .'.

'What's to do now?' broke in the deep pleasant voice of Dr. Petty. 'You're always in hot water nowadays, Tom'. Dr. Petty's appearance had a quietening effect on Tom. 'If you didn't steal the hams, what's the use of raging about it? Besides a ham or two is nothing to those other matters

you know Tom,—but we'll keep them to ourselves . . .'. He winked at Dick: 'It's no use everyone knowing'.

It was the first time the Doctor had gibed him in public and Tom began to experience a feeling of intense uneasiness. An ugly thought now came

FIG. 1.—Market Square, Grassington.

to his mind and made him forget about his row with Dick Linton. Dr. Petty broke in on his vile scheming: 'You carry yourself as if you were the most innocent man in the neighbourhood and, as for keeping secrets, that depends on yourself Tom Lee'.

'Does it?' said Tom, with an unnatural laugh. 'Then I'll see 'em kept' he added menacingly.

'What do you mean?' asked the Doctor quietly, as he realized the implication of Tom's remark.

Dick joined in: 'He's threatening your life, that's what—he's oft at that game if onybody speaks to 'im'.

THE OMEN

'Tom Lee means yer no good, Doctor' said the landlord's wife as Dr. Petty

was leaving the inn. 'Here, have this drink to warm the cockles of your heart before you go' she invited.

After draining the glass, his horse moved suddenly and he dropped it. Instead of shattering in pieces it rebounded whole and sound as Dame

FIG. 2.—The village shop—once Tom Lee's smithy.

Hodgson caught it. She paled and became very perturbed as she recalled the superstition: 'That bodes no good' she said ominously.

THE CRIME

Tom Lee soon formed a plan to put his sinful thoughts into action. He must get rid of the Doctor, who knew too much, as soon as possible. After dark that night he hid himself in Gra s Woods, knowing that Dr. Petty would, as usual, come through the woods on his way home. Sure enough the Doctor, riding his horse, eventuall/ approached along the path and entered the gate to the Grass Woods. As he bent down to fasten it he was brought reeling from the saddle by a heavy blow from Tom's bludgeon. The Doctor stunned, fell in a heap and the frightened horse galloped away. The Doctor, a powerful man, scrambled to his feet again and wrenched the weapon from Tom, shouting: 'You murderous villain, I live yet'. A struggle to the death ensued and at last Tom succeeded in drawing a clasp knife from his pocket and plunged it deep into the doctor's side. He suddenly lay still and apparently lifeless. So that there would be no mistake, Tom again stabbed the motionless body, dragged it away from the path and covered it with leaves and grass.

It was only then that Tom felt the foulness of his deed and, fearing the consequences, rushed back to his home where he at once told his wife everything. They discovered that their apprentice, Jack Sharpe, had over-

heard every word and decided that the only way to be assured that he would not betray them was to make him take part in disposing of the body. Tom made him dress and go back with him to the woods and there he told him that he must help to remove the body to a place of safety. On reaching the spot where the body had been left, Tom was horror-stricken to find that it was not there. Fear clutched at him like the crushing tentacles of an octopus as he thought that his evil deed had been discovered. At that moment, however, he heard a groan and soon traced it higher up the pathway, where the doctor lay, still living but practically dead from loss of blood. He had regained consciousness and crawled towards the path in the hope that he might be seen by someone, although it was unlikely at that late hour. Tom soon hit upon the idea of binding Jack Sharpe to secrecy by making him finish off his own ghastly crime. Feared for his own life, Jack Sharpe quickly procured a stake and at once proceeded to end the Doctor's life with one or two lethal blows. The Doctor took his last breath. They quickly put the body in a sack and, after hiding the bloodstains, trudged up the ascent to a deep rocky glen where they buried the body.

The next morning, the Doctor's horse was found pawing the ground outside its stable. An old servant reported this to Mrs. Petty, who immediately sensed a tragedy, and search parties went out to look for the Doctor but all were unsuccessful.

Tom Lee, hearing of the commotion in the village brought about by the Doctor's disappearance and of the efforts of the search parties to discover his whereabouts, spent the day in agonizing fear of discovery. So insecure did he feel that he decided that the hiding place he had chosen for the body was far too vulnerable. So at midnight he set forth again, this time accompanied by his wife and their pony, Jack Sharpe now being so full of fear that he would have been a hindrance on such a mission. The shadows of the night hid them as they made their way across the mountain ridge to the rocky glen. Working quickly, they dug up the body and put it into the sack which they had brought for the purpose, tied it on to the pony's back, and returned in the direction of Grassington Moor and Hebden. Eventually they wearily descended the hillside and came to a road leading to Burnsall. They turned towards the River Wharfe, at Loup Scar, and then stopped to tie a heavy stone to the cord which had secured the sack to the pony. They then set the sack and its contents rolling into the river.

RETRIBUTION

Little did they know that the stone slipped from the cord before entering the water, and the Doctor's body came to rest under the river bank. Little did they know also that the splash had been heard by one Ned Sykes, who was returning home late from courting in Burnsall. On investigation, Ned recognized Tom Lee and his wife disappearing from view, and his dreams

of his future bride were momentarily interrupted while he wondered what they were doing there at this hour.

On the following Sunday morning, some youths on their way to the service at Burnsall Church discovered the body wedged by the river bank. The church bells were ringing as the boys dashed to tell Peter Dawson, the sexton and verger, of their find. The body was then recovered and taken to the Bridge Tavern. The coroner was sent for and an inquest held the next day. At the inquest Tom Lee was charged with the murder of Dr. Petty but he was acquitted despite the evidence of Dick Linton and the landlord's wife at the 'Angler's Inn' of veiled threats on Dr. Petty's life. Ned Sykes also gave evidence of his encounter with Tom Lee and his wife late at night and told of the splash in the river.

The local people were not satisfied and demanded a retrial. Jack Sharpe, scared as a rabbit, was brought forward as a witness, but Tom still knew how to deal with Jack to keep him from divulging any facts and, through lack of circumstantial evidence, Tom was again found not guilty. The villagers, however, were certain of Tom's guilt, and were determined to bring him to justice. Eventually, Dick Linton and his companions lured Jack Sharpe away from his master and, plying him with drinks and flattery, managed to persuade him that he would be pardoned for his part in the crime if he turned King's evidence. A lawyer was present at the confession and Tom Lee was arrested and taken to York Castle, being charged for the third time with the murder of Dr. Petty. He was finally convicted and condemned to the gallows.

NEMESIS

Even to the end Tom Lee would not show his fear of anyone, or of the ugly death which awaited him, and when the blacksmith entered his cell to measure him for gibbet irons, he joked about having been measured by a tailor and a shoemaker previously but never by a blacksmith. After the penalty had been paid, Tom Lee's body was transported to Grassington and gibbeted near to the scene of the crime, which was for many years known as Gibbet Hill. The actual gibbet irons are said to be buried in the hill.

Some interesting relics in verification of this story can be seen at the Skipton Museum, including the goblet from which Dr. Petty drank at the Angler's Inn, several of his ancient and gruesome-looking instruments, and various manuscripts and expense accounts of witnesses involved in the trial.

CURRENT THERAPEUTICS

CXXIV—MECAMYLAMINE

By K. D. ALLANBY, M.D., M.R.C.P.
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GANGLION-BLOCKING agents are undoubtedly the most potent hypotensive drugs at present available, and extensive research has continued in order to discover similar compounds which can safely be given by mouth and, if possible, with decreased side-effects. At the moment, however, it is difficult to imagine that any drug whose main action is the wholesale blockage of impulses at autonomic ganglia can fail to possess unwanted parasympathetic effects. Mecamylamine is the most recently introduced of these compounds, and many accounts of its use in hypertension have been published (Freis and Wilson, 1955, 1956; Ford *et al.*, 1955; Schneckloth *et al.*, 1956; Doyle *et al.*, 1956; Smirk and McQueen, 1957; Kitchin *et al.*, 1957).

PHARMACOLOGY

Milne and his colleagues (1957) have studied the pharmacology of mecamylamine in great detail, both in animals and in man. Mecamylamine is a secondary amine and thus quite distinct from the methonium compounds which are all quaternary ammonium salts. It resembles other secondary amines, notably mepacrine and chloroquine, which are almost completely absorbed from the intestine. These compounds enter cells and combine with intracellular protein; consequently their excretion is slow. In all these respects mecamylamine differs from the quaternary ammonium salts which are distributed only in the extracellular fluid, and are rapidly excreted by the kidney. Mecamylamine shares another remarkable and important property with mepacrine and chloroquine in that the renal clearance of these drugs is dependent upon urinary pH. Excretion is very slow in alkaline urine, but is progressively increased as the urine becomes acid. This has been demonstrated in dogs by Baer *et al.* (1956) and confirmed by Allanby and Trounce (1957), and by Milne *et al.* (1957) in human subjects. Coincident administration therefore of alkalinizing drugs, such as potassium citrate and sodium bicarbonate, or of acetazolamide, almost entirely prevents the excretion of mecamylamine. What proportion, if any, of a given dose is metabolized is undecided: Milne *et al.* recovered approximately 60 per cent. from the urine, but Allanby and Trounce obtained greater amounts, up to 90 per cent. in some subjects, and it seems that the major portion is excreted unchanged by the kidneys. Elimination of a single dose is continued for forty-eight hours, and after maintenance therapy the drug may be detected in the urine for three days. After oral administration mecamylamine cannot be detected in the fæces. Further evidence of complete absorption is provided by the

finding that the proportion recovered from the urine after similar oral and intravenous doses shows no significant difference. Renal failure reduces the rate of excretion.

Mecamylamine has been considered by most authors to be a ganglion blocking agent, but Bennett *et al.* (1957) have recently suggested that not only does its action on the ganglion cells themselves differ from that of other ganglion-blocking drugs, but that it possesses central actions on the nervous system, and also direct actions on the heart, intestine, and neuromuscular junction. This might explain the observation that the blood pressure falls after a dose insufficient to cause ganglion blockade (Freis and Wilson, 1956), and the occurrence of side-effects such as muscular weakness, nervousness and tremor. Whatever the exact mode of action, in many respects mecamylamine clinically resembles other ganglion-blocking agents.

DOSAGE AND DURATION OF EFFECT

After an oral dose of mecamylamine the blood pressure starts to fall within one to two hours, and the maximum fall is seen up to six hours. With large doses the pressure may not return to normal until twelve hours later. The resulting fall is smooth and fluctuations in pressure are usually absent. Intravenous administration is also followed by a delay—usually about one hour—in the onset of the hypotensive action, and parenteral hexamethonium is superior if a rapid fall of pressure is required.

This prolonged action of mecamylamine makes satisfactory control of blood pressure possible with two or three daily doses: equal doses should be given night and morning, and a smaller or equal one may be given at midday if necessary. Treatment is best started in hospital, where facilities for frequent blood pressure measurements exist, and the initial dose should be 2.5 mg. twice daily. This may be increased as necessary, and a midday dose added if desirable. Total daily increases should not exceed 5 mg. and, since the full effect of any alteration may not be apparent for three days, this interval should always elapse before further changes are made. Individual daily requirements vary widely: amounts from 5 to 180 mg. have been reported in different series, but most patients need between 10 and 90 mg., and it is probably unwise to exceed 100 mg. a day. As with methonium compounds, renal failure considerably decreases the effective daily dose.

Usually the maximum fall in blood pressure occurs when the patient is in an upright position, but some patients show almost as great a fall while lying down (Smirk and McQueen, 1957; Schneckloth *et al.*, 1956), possibly due to the central effects described by Bennett *et al.* (1957). Attempts to increase the effect during sleep, by raising the head of the bed or by using extra pillows, are often disappointing.

Tolerance is very rare, with the advantage that adjustments in dosage are seldom needed.

Combined administration.—The simultaneous use of other hypotensive drugs, such as hydrallazine or one of the Rauwolfia alkaloids, may lessen the

daily requirement of mecamylamine, leading to a reduction in side-effects. There is no contraindication to the use of such a combination.

SIDE-EFFECTS

There are few patients whose blood pressure cannot be reduced by ganglion-blocking drugs, but the extent of the fall is often limited by the presence of unwanted side-effects. To justify any claim of real superiority over existing drugs, a new compound should show a great improvement in this respect. Clinical experience has indicated that side-effects are at least as common with mecamylamine as with other compounds and, as already suggested, significant improvement is hardly to be expected from any drug whose main action is to block both sympathetic and parasympathetic impulses at autonomic ganglia. The reported frequency of side-effects varies slightly, probably depending upon the level of blood pressure regarded as satisfactory as a result of treatment. In addition to the side-effects attributable to ganglion blocking, neurological symptoms and signs, believed to be due to a direct action of mecamylamine on the cells of the central nervous system, have been observed in a small number of patients; these will be discussed later.

Constipation is extremely common, and occurs in at least nine out of ten patients. It is best to prevent this by prescribing tablets of cascara sagrada B.P. (2 grains [0.12 g.]) or a senna preparation nightly. Sometimes a saline purgative is required each morning in addition and, in severe cases, neostigmine, 15 to 45 mg. by mouth, may be tried. *Abdominal distension* or a feeling of fullness often accompanies constipation, but may itself cause discomfort. Neostigmine often helps. All patients should be warned to seek medical advice if constipation persists for forty-eight hours, particularly if accompanied by increasing distension.

Vomiting is the result of gastric atony, and may necessitate stopping treatment. *Pyloric stenosis is an absolute contraindication to mecamylamine therapy.*

Diarrhœa may follow the administration of any ganglion-blocking agent.

Barnett (1958) has recently reported two instances of severe diarrhœa with mecamylamine. The exact cause is unknown, but one of Barnett's patients died and presented gross ulceration of the colon at necropsy, presumably a direct local effect.

If severe diarrhœa occurs the drug must be stopped immediately and resuscitative measures be instituted without delay. The complete absorption of mecamylamine probably reduces the risk of *paralytic ileus* although it has been reported (Smirk and McQueen, 1957). No large reservoir of unabsorbed drug exists in the intestine, and the sudden and unexpected absorption of large amounts due to stasis does not take place. If very large doses are used, or if excretion is slowed by the administration of alkalis or acetazolamide, ileus may develop.

Dryness of the mouth and *loss of taste* are common, and cause discomfort and annoyance but no more. They may be partially alleviated by a mixture containing pilocarpine nitrate, $\frac{1}{8}$ to $\frac{1}{6}$ grain (8 to 10 mg.).

Paralysis of accommodation, leading to blurred vision or inability to read

and perform fine work, troubles approximately 50 per cent. of patients. It is often a source of considerable discomfort. Eye-drops containing pilocarpine (2 per cent.) or physostigmine (1 per cent.) can be tried and, if necessary, reading-glasses should be prescribed or existing ones altered.

Difficulty and hesitancy in emptying the bladder or *retention* is seen occasionally. Prostatic enlargement may intensify symptoms and lead to retention. Many patients require nothing more than reassurance but, if necessary, carbachol, 2 mg., should be given. Retention with overflow, simulating frequency, may be missed unless the possibility is borne in mind. The drug should be stopped if this occurs. *Impotence* may trouble male patients, and cause considerable anxiety. It should be explained to the patient that it is the result of the drug, and that it often disappears later.

A *feeling of malaise* or *fatigue* is a complaint sometimes made by patients receiving mecamylamine: the cause is not clear and may depend upon direct central nervous and neuromuscular effects.

Neurological symptoms not previously encountered with other ganglion-blocking agents have been reported by Schneckloth *et al.* (1956).

> In seven patients symptoms included convulsions, disorientation, and delusions. Tremor was almost invariable; it was usually generalized and often choreiform. One patient exhibited a generalized coarse tremor. These symptoms completely disappeared in four patients when the drug was withdrawn. A similar picture has been observed in two patients by Doyle and Neilson (1956).

So far these complications have only been reported in advanced hypertension, often with renal failure or with a history of previous vascular accidents. Bennett *et al.* (1957) have suggested that penetration of mecamylamine into the cells of the central nervous system may be responsible, but it is uncertain how far severe vascular disease plays a part. The drug should be withdrawn if these symptoms arise.

POSTURAL HYPOTENSION

This is sometimes wrongly regarded as a side-effect of ganglion-blocking treatment: it certainly represents an unwanted effect when extreme, but logically it is an exaggeration of the desired effect. Its occurrence with hexamethonium is partly due to irregular absorption, and also to the necessity for producing the greatest possible reduction of pressure with each dose owing to the rapid excretion of the drug. Reports confirm that mecamylamine leads to a smoother control of blood pressure, and unpleasant bouts of hypotension are rare. Once a satisfactory daily dose has been determined, wide fluctuations should not occur unless excretion is hampered by the administration of alkalis or acetazolamide. If hypotension should occur, lying with the head down will mitigate the effects; if severe or prolonged, methedrine (10 to 30 mg. intramuscularly) may be given to restore the pressure.

EFFECT OF ALKALIS AND ACETAZOLAMIDE

It has already been noted that the excretion of mecamylamine depends upon the reaction of the urine, and throughout twenty-four hours the urine is

predominantly acid. If alkaline mixtures or acetazolamide are administered, mecamylamine will be retained in the body, leading to considerable hypotension, and development or exaggeration of side-effects. In these circumstances, the drug should be stopped temporarily, and careful inquiry made to discover if the patient has for any reason been taking alkalis or acetazolamide. Patients should be warned not to take any drug, such as stomach powders or kidney preparations, without seeking medical advice. Even in hospital an alkaline mixture is sometimes unthinkingly given to assist difficulty with micturition. Ammonium chloride (2 g. four-hourly) hastens excretion by acidifying the urine.

RENAL FAILURE

The presence of a raised blood urea does not necessarily preclude treatment with mecamylamine. Excretion will be slower and consequently smaller doses will be effective: the same is true for other ganglion-blocking drugs. Harington and Rosenheim (1954) found that in cases of severe hypertension with renal failure treatment with hexamethonium usually did not lead to a further rise in blood urea, unless already very high, and often the level decreased. The treatment of hypertension resulting from primary renal disease is a little different. Abrahams and Wilson (1957) have reported that ganglion-blocking drugs may safely be used if the blood urea is initially below 60 mg. per 100 ml., but deterioration occurs with levels above 70 mg. Mecamylamine may be given in similar cases, but it is clearly wise to measure the blood urea at intervals during treatment. Despite renal failure, it should certainly never be withheld if symptomatic relief, such as improvement in vision, headaches, or dyspnœa, is likely.

DISCUSSION

Mecamylamine undoubtedly reduces the blood pressure in most patients when given by mouth, but it would be quite wrong to pretend that it is the ideal drug for treating hypertension. Such a drug has not yet been discovered. Mecamylamine certainly does possess some advantages over existing ganglion-blocking agents, but they are of relatively little account, and severe side-effects, the main drawback with all ganglion-blocking drugs, occur with disappointing frequency. Reliable and complete absorption coupled with slow excretion is the greatest improvement, for this not only leads to smoother blood-pressure control but also lessens the risk of paralytic ileus. Schneckloth *et al.* (1956) have pointed out that within reasonable limits the size of dose required is of no real importance, and the fact that the daily requirements of mecamylamine are rather smaller than with other ganglion-blocking agents does not weigh very heavily in its favour. The infrequency with which tolerance develops is an advantage during maintenance therapy.

At present, mecamylamine is probably the drug of choice for the long-term treatment of severe hypertension, but its slight superiority over other drugs has not altered the fact that treatment with ganglion-blocking agents

is time-consuming for the doctor and requires cooperation from the patient. Kitchin *et al.* (1957) have drawn attention to the fact that few patients feel really well while taking mecamylamine, even though previously they had often been symptom free. Furthermore, treatment of this nature cannot fail to focus attention on the blood pressure, often to the patient's disadvantage. Consequently, mecamylamine should be avoided unless there is evidence of deterioration or progression of the disease. The indications for treatment with ganglion-blocking drugs have been reviewed by Kauntze (1957), and include papillœdema, encephalopathy, and heart failure. Young patients with a progressively rising diastolic pressure often require treatment, but mecamylamine should be avoided in the elderly unless urgent indications are present. Even if side-effects compel the abandonment of treatment, another ganglion-blocking agent may, nevertheless, be better tolerated by the patient and should always be tried.

The improvement in the prognosis of severe hypertension achieved with earlier ganglion-blocking agents cannot be disregarded and, although long-term results are not yet available, there is every reason to suppose that a similar improvement will be obtained with mecamylamine. Some reduction in dose, and therefore in side-effects, may follow the combination of mecamylamine with other hypotensive drugs, and in this connexion the report of Tapia *et al.* (1957) of the potentiating action of the new diuretic, chlorothiazide, when used with mecamylamine, is of great interest. The mechanism of this effect is not fully known, but Harington and Kincaid-Smith (1958) suggest that it is at least partly due to interference with the excretion of mecamylamine by chlorothiazide. It is therefore wise to remember not only the likelihood of an increased hypotensive effect, but also the possibility of cumulation of mecamylamine when these two drugs are prescribed simultaneously.

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MINOR SURGICAL PROCEDURES

III.—INFECTIONS OF THE TERMINAL PHALANX

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INFECTIONS of the hand, of varying degrees of severity, are common and, unless promptly and adequately treated, can lead to considerable disability and economic loss to the patient. Of these infections, those which are most commonly encountered involve the terminal phalanx either as (a) infection of the pulp (felon), (b) apical infection, between the distal part of the nail and the underlying nail-bed, or (c) infection round the nail fold (paronychia).

The common infecting organism is the *Staphylococcus pyogenes aureus* and, as is usually the case with this organism, a localized abscess results. Occasionally the *Streptococcus pyogenes* is the causative organism, particularly in pulp infections; in such cases, whilst some localized pus formation may occur, there is a progressive lymphangitis which ascends the arm and may, in severe cases, lead to septicæmia. Rarely, a fungus infection may cause subacute or chronic paronychia.

INFECTION OF THE PULP

The pulp of the terminal phalanx is a modified form of the superficial fascia and is composed of a pad of fibro-fatty tissue divided into numerous compartments by fibrous septa. These run longitudinally, and are attached superficially to the skin and deeply to the periosteum of the distal two-thirds of the phalangeal bone. The proximal third of the bone affords attachment to the deep flexor tendon and has a blood supply which is distinct from that of the distal portion. The pulp is bounded proximally by the attachment of the skin to the deep fascia of the finger at the level of the distal skin crease and this, in its turn, fuses with the periosteum of the phalanx. Any infection of the pulp is therefore contained in a closed pocket and, unless treated, it can only escape by necrosis of the overlying skin. Again, unless treatment is prompt and adequate, the infection spreads to involve the distal portion of the bone which may, by a combined process of infection and thrombosis of its blood supply, become necrotic and sequestrate. In such an eventuality, however, the proximal part, by virtue of its separate blood supply, survives and in due course will give rise to regeneration of the terminal portion.

Infection of the pulp commonly occurs from minor scratches or penetrating wounds caused by thorns, a prick with a needle or pin, wood splinters or spicules of metal, and in all such cases it is a wise precaution, at the time of injury, to encourage bleeding from the wound by passive congestion or by holding the end of the finger under hot running water.

The patient complains of a throbbing pain in the pulp of the affected

terminal phalanx, which becomes rapidly worse. Swelling then occurs and within thirty-six to forty-eight hours the typical appearance of a red, swollen, tender terminal phalanx follows. Constitutional symptoms (raised temperature, rapid pulse) are usually mild. At this stage pus has formed and must be released as soon as possible; otherwise complications will result. As the pressure within the pulp increases, the colour of the overlying skin changes from a bright red to a dusky blue as necrosis threatens, and, if this is allowed to progress, the skin gives way with discharge of pus and sinus formation.

In the early stages it is important to distinguish between a true (staphylococcal) abscess of the pulp and a streptococcal infection arising in the pulp and spreading proximally. In the latter case the swelling is less marked and extends beyond the terminal phalanx, the red lines of lymphangitis are seen extending up the forearm and arm to the axilla and, in severe cases, constitutional symptoms may be marked. Such cases must be treated immediately with an antibiotic drug (preferably penicillin which is specific against *Streptococcus pyogenes*) before any surgical intervention is contemplated. Indeed the latter is usually contraindicated in such cases.

Apical infections under the nail result from penetration of a splinter of wood or metal which may remain *in situ* in whole or in part. Local tenderness is severe and in two to three days a small abscess becomes visible under the nail, or at the tip of the finger.

PARONYCHIA

Paronychia is the term applied to any infection arising in the nail fold; it commonly gains entrance through a small crack or abrasion or as a result of careless manicuring. The infecting organism is almost invariably *Staphylococcus pyogenes*. Rarely a fungus infection of the nail fold occurs, which can become very chronic and resistant to treatment. The infection generally begins on one side of the nail fold or in one corner and a localized, red, tender swelling appears. If allowed to progress, the infection extends under the cuticle, round the nail fold (the so-called 'run around'); if neglected, it will then penetrate under the nail, lifting it off the underlying nail bed.

Clinically this condition is readily recognized in the acute stage. The red, painful, acutely tender swelling in the nail fold is characteristic and in more advanced cases pus may be visible under the skin, or the proximal portion of the nail may even be raised and floating on pus. Occasionally a subacute or chronic paronychia may be present; this is usually the result of a neglected pyogenic infection, but may be due to a fungus infection. In the latter case more than one finger may be involved, and the diagnosis rests on the demonstration of the causative organism.

TREATMENT

Antibiotic therapy.—In the early stages of any infection of the terminal phalanx, before pus formation has occurred, appropriate antibiotic therapy may be effective in aborting the infection. The safest antibiotic to use is

penicillin, given by *intramuscular injection* in doses of 0.5 to 1 mega unit twice daily, or oftener if necessary; it should always be given in cases in which the possibility of *Streptococcus pyogenes* infection is suspected. Whilst this organism is always sensitive to penicillin, it is unfortunately true that many strains of *Staphylococcus pyogenes aureus* encountered today are penicillin resistant. In all cases therefore in which pus is obtained, a specimen should be sent to the laboratory for isolation of the organism and determination of its sensitivity to antibiotics. The value of antibiotic therapy in hastening healing in established uncomplicated infection of the terminal phalanx is doubtful, but it assists in limiting spread of the infection and its use in complicated cases, especially in those in which the bone is affected, is of considerable value in shortening the period of convalescence after surgical treatment, provided it is continued for a sufficient length of time.

In all cases in which pus is definitely present, incision and drainage of the abscess should be undertaken as soon as possible.

Procedure.—Operation should be done in a bloodless field, obtained by using a pneumatic tourniquet round the upper arm, or a thin piece of rubber tubing stretched round the base of the finger and held by a pair of artery forceps. General anæsthesia is undoubtedly to be preferred but, should this not be possible, adequate anæsthesia can be obtained by blocking the digital nerves on each side of the base of the finger, using 2 per cent. procaine *without* adrenaline. The use of an ethyl chloride spray is mentioned only to be condemned; its anæsthetic effect is quite inadequate and its use interferes with the proper exploration of the lesion.

Instruments.—These should be appropriate to the task in hand, and should include a No. 10 or 15 Bard-Parker blade on a No. 3 handle, a pair of small sharp-pointed scissors, two or three pairs of fine artery forceps, a pair of small toothed dissecting forceps and two fine hook retractors.

SURGICAL TECHNIQUE FOR INFECTIONS OF THE PULP

(a) When the skin of the terminal phalanx is not involved, an incision 1 to 1.5 cm. long is made along one or other side of the terminal phalanx, and placed so that it lies just anterior to the bone. The inverted hockey-stick incision previously advocated is no longer used. The blade of the knife is passed deeply into the pulp, dividing the fibrous septa at their attachment to the bone, until it enters the abscess cavity. Should it appear necessary a similar incision can be made on the other side of the phalanx. The incision is held open by fine hook retractors or by the blades of a fine artery forceps, pus is mopped out and any slough removed with forceps. The latter are then used for gentle exploration of the cavity to ensure that it has been fully opened. Finally, a small piece of glove-rubber is inserted as a drain (gauze or corrugated rubber should not be used) and a dressing of 'tulle gras' and gauze is applied.

(b) When the skin has become involved and a subcuticular abscess or a sinus is present it is usually unnecessary to make a lateral incision

as this does not promote better drainage, the pus continuing to drain through the sinus. In such cases it is better to remove the overlying cuticle (if present) with sharp-pointed scissors and then enlarge the sinus opening transversely on each side with the knife, in the direction of Langer's lines, using minimal incisions. The edges of the opening are then carefully held apart, and pus and sloughs removed. Should there be any loose bone present it is lifted out, but no attempt should be made to remove attached bone forcibly, even should it appear infected, or to curette the cavity. When it is seen by careful inspection that the abscess cavity has been fully opened and all pus and sloughs removed, the wound is drained and dressed as before. It is in these cases, in which the bone is often infected, that the continued use of an appropriate antibiotic postoperatively is of greatest value in shortening convalescence, and a specimen of the pus should always be sent for bacteriological examination to determine the organism and its sensitivity.

Postoperative care.—In either case the dressing is removed after two to three days, the drain removed and a dressing of 'tulle gras' and dry gauze reapplied; this is renewed at intervals of four to five days until healing is complete.

In uncomplicated cases adequately treated, the finger can be expected to have healed in two to three weeks; in cases complicated by sinus formation or necrosis of the bone, healing takes four weeks or longer.

In a case of *apical infection* a small wedge of the end of the nail is removed over the site of the abscess and pus and any retained foreign body are removed. A 'tulle gras' and dry gauze dressing is then applied.

SURGICAL TECHNIQUE FOR PARONYCHIA

In the case of a subcuticular 'run-around' all that may be necessary is to open the abscess with the point of the scalpel and then cut away the overlying cuticle with sharp-pointed scissors, thus releasing the pus.

Where the infection is deeper, however, or where the pus has obviously penetrated under the nail, two small incisions should be made, running proximally, one from each corner of the nail, and a rectangular flap of skin raised from the nail by careful sharp dissection until the base of the latter is visible. This will release the pus in the tissues round the nail. If it is then seen that pus is also present under the latter, its proximal third is cut away with the scissors, exposing the underlying nail-bed. It is seldom necessary to remove the entire nail, and this should be avoided if possible, as the exposed nail-bed is very sensitive. Having mopped away all the pus with small gauze swabs, a single layer of 'tulle gras' is laid between the flap and the nail-bed and the flap allowed to fall back into place; this allows drainage to continue while preventing adhesions forming between the flap and the nail-bed. The whole area is covered with a single layer of 'tulle gras' and a dry gauze dressing is bandaged carefully in place over it.

This initial dressing is removed three or four days later and, the acute

infection having subsided, a layer of 'tulle gras' is applied over the granulations in the nail-bed, covered with dry gauze, and the dressing again left undisturbed for a further four to five days. Further dressings are then applied at similar intervals until the lesion has healed and the new nail has grown to cover the exposed nail-bed.

REVISION CORNER

DUPUYTREN'S CONTRACTURE

THE condition to which the name of Dupuytren is indissolubly attached has been recognized for time out of mind. The classical posture of the apostolic blessing demonstrates Dupuytren's contracture in its most advanced form. Hence the term 'manus apostolicus', by which it was known until the 19th century. Presumably the clerics of ancient days, like their successors in modern times, were much addicted to Dupuytren's contracture and were forced to make a virtue of necessity. This fact, incidentally, should help the student of today to remember that this contracture is an affection of the white-collar worker more often than the manual labourer. He is still taught that the condition is common in coachmen and horse-bus drivers!

HISTORICAL

Baron Guillaume Dupuytren (1777-1835) was a versatile surgeon, and his original communication on this subject appeared in *The Lancet* in 1834. This article was based upon his experience with two patients who had contracture of the hand and on whom he operated. One was a wine merchant who was obliged to 'perforate continually the corks with a gimlet' and the other was a 'coachman who plied his whip unceasingly on the backs of his jaded horses'. In both instances the deformity was corrected by a simple transverse incision across the proximal phalanx at the site of the deformity. The skin and fascia were divided and the deformity was corrected. After copious suppuration and splintage in extension for six weeks, Dupuytren claimed excellent results and full function. Such a happy outcome is often denied to the surgeons of today.

Many years previously, Sir Astley Cooper had fully described the deformity but, so far as is known, had not attempted a correction by operation.

DIAGNOSIS

The diagnosis is obvious. The differential diagnosis between Dupuytren's contracture, ulna claw hand and congenital contracture of the fifth finger, which is often laboured in the textbooks, may be of importance to the amateur diagnostician standing at the bar of his golf club but is meaningless to the doctor to whom, at a glance, the diagnosis is obvious.

TWO TYPES

In the main this condition can be divided into two types.

(1) *With contracture of the fingers.*—Commonly there is a flexion contracture of the ring finger or the little finger or both, with flexion of the proximal interphalangeal joint and often of the metacarpo-phalangeal joint. The distal interphalangeal joint is not affected in the contracture but occasionally a hyperextension deformity may develop when the finger is considerably flexed. An elevated band of deep fascia is present which is evidently causing the flexion of the finger. The bands may be multiple. On stretching the band it becomes obviously tight. The skin of the palm and the finger is attached to the fascia although it preserves its normal limited mobility except where it is puckered by a direct extension of fibrosis into the skin. Sometimes the band is thin and discrete like whipcord; on other occasions it is diffuse, spreading across the palm, seeming to be a thickening of the palmar fascia with secondary contraction of the fingers. The proximal margin of the thickened fascia may extend to the base of the palm. The distal border extends to the middle phalanx and seems to insert itself into the phalanx or tendon sheath at that level.

(2) *With nodules in the palm or fingers.*—This variant may represent the initial stage of the previously mentioned type or it may remain as an entity itself. It consists of nodules in the palm or the proximal part of the ring or little fingers. There seems to be little or no continuity between the nodules and there is usually no contracture of the finger at the metacarpo-phalangeal joint. Sometimes these nodules become relatively large and the patient complains that they are tender. It is important to recognize this variant as being a likely curtain-raiser to the obvious Dupuytren contracture with deformity. The results of surgery are infinitely better if deformity is not gross.

Sometimes the fibrosis spreads to the radial side of the palm, affecting the middle and index fingers. Similarly, the web of the thumb may be affected leading to loss of abduction. There are infinite variations and combinations of the condition, but each one will be obvious and the diagnosis need never be in doubt.

TREATMENT

There is no cure but by surgery. Patients usually present themselves because of increasing deformity, which may vary from a small loss of extension of a metacarpo-phalangeal joint to a finger flexed into the palm of many years standing. Surgery is applicable in two ways: by fasciotomy or by fasciectomy.

Fasciotomy.—The basis of this method of correction is to lift the skin from the thickened fascia by sweeping horizontal strokes of a small-bladed tenotome. The contracted fascial bands are then divided, permitting correction of the deformity as far as the skin will permit. The tenotome is inserted in several appropriate places allowing access to all the thickened fascia. Compression is then applied, but within twenty-four hours the bandage is removed to allow the newly straightened fingers to be mobilized, thereby preventing subsequent stiffness. The criticism of the method is that the

abnormal tissue is not removed and so, theoretically, relapse is to be expected. In practice, however, fasciotomy has rarely to be repeated.

Fasciectomy.—The method is attractive because it implies removal of the deforming tissue. Technically, however, there are difficulties. Approach to the thickened fascia is not easy and the skin has to be so thinned that its survival is jeopardized. The skin has then to be replaced and held in contact with the deep tissues by continuous pressure. This requires immobilization of the fingers and implies, therefore, inevitable joint stiffness if much deformity was present before surgery.

In general terms the two different methods are applicable to two different types of affection. When the deformity is considerable and of long standing, multiple subcutaneous fasciotomy is desirable because it is likely to allow an acceptable correction with minimal joint stiffness. If the deformity is mild and of short duration, especially in a younger patient, fascial excision is the method of choice because the chance of a recurrence of the deformity is reduced if the fascia is removed.

Finally, it is as well for the surgeon and the patient to be satisfied with something less than perfection. The wise surgeon will know when to leave well alone and also when to amputate. Enthusiastic attempts to straighten a finger beyond its capacity to endure will lead to postoperative vascular complications and crippling finger stiffness.

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ENEMAS

AN enema is the introduction of fluid into the rectum. There is a little mystery and some confusion about the subject which is really a very simple one. This arises for several reasons. An enema is usually given by the nurse but ordered by doctors, many of whom have never administered one and have only a vague idea of the practical details. This accounts for the mystery. Confusion arises over the terms 'high' and 'low' enema, colonic washout, rectal salines, and the precise constituents of the enema.

SOME BASIC DATA

A few simple points on the large intestine are worth considering. The ileocæcal valve normally prevents the regurgitation of cæcal contents into the ileum. In the right colon fluid fæces and gas are the normal contents. The left colonic contents are flatus and solid fæces. Finally, it is important to remember that it is impossible to introduce a tube from the anus for more than three to four inches (7 to 10 cm.) upwards, a point which a glance at any radiograph of a barium enema will confirm. A tube passed for a greater length coils up in the rectum with consequent discomfort to the patient and obstruction to any fluid which may be introduced.

Rectal injections may be given for many reasons, which are considered

presently, but a word on the basic mechanics may be helpful. From a head of pressure (in either a douche-can for a large quantity, or in a funnel for a small quantity) fluid is run in. The greater pressure achieved by raising (a) the level of the funnel, (b) the foot of the bed, (c) the patient's pelvis, the farther around the bowel the fluid will flow—a high enema. Less pressure and a smaller quantity of fluid will contact only the lower reaches of the colon—a low enema.

If the fluid is to be absorbed it is given much more slowly and in smaller quantities, about 10 ounces (285 ml.) in ten minutes. On the other hand, if the bowel is to be completely cleansed a large quantity of fluid, 7 to 8 pints (4 to 4.5 litres), is given in divided amounts fairly rapidly and siphoned back; this is known as a washout.

INDICATIONS

(1) *To empty the bowel of flatus.*—One should always be sure that a simple flatus tube is not all that is required, particularly in the forty-eight hours after the operation. Most important, it should be passed frequently and left *in situ* for ten minutes. In the presence of gross distension from flatus a turpentine enema, ¼ to 1 fluid ounce (7 to 28 ml.) of turpentine mixed with 2 ounces (57 ml.) of olive oil and a pint (0.57 litre) of soap and water, is most effective.

(2) *To empty the bowel of fæces.*—If fæces are impacted in the rectum warm olive oil, 6 ounces (170 ml.), is run in and an ordinary soap-and-water enema is given one hour later. If this is unsuccessful manual removal under an anæsthetic may be necessary. For ordinary cleansing of the bowel warm water (100°F. [37.8°C.]) or warm soap and water, 2 to 3 pints (1 to 1.15 litres) in the adult, is the standard enema. For a powerful more purgative effect castor oil or magnesium sulphate may be given. A 25 per cent. solution of magnesium sulphate is also very effective in dehydration therapy for the relief of cerebral œdema. The only important point to remember in all rectal injections is to use a catheter and funnel or can, and never a rigid nozzle for fear of perforating the bowel.

The ordinary soap-and-water enema is sometimes helpful in the diagnosis of intestinal obstruction and particular note must be made as to whether or not flatus is passed. In many cases this is far more reliable than straight abdominal radiography for fluid levels. There is the further advantage that when the obstruction has been relieved the patient is not unduly troubled by accumulated fæces in the distal bowel.

(3) *To cleanse the bowel.*—Before operations on the colon, or for endoscopic examinations, 6 to 7 pints (3.5 to 4 litres) of fluid may be run in slowly in quantities of ½ to 1 pint (250 to 500 ml.) and siphoned back. This is known as a washout and should be completed at least one hour or more before sigmoidoscopic examination, otherwise the stimulant effect in opaque fluid will blur the view. This is prevented by passing a rectal tube twenty minutes before the patient leaves for the theatre.

In addition, non-absorbable sulphonamides should be given to sterilize the bowel.

(4) *Therapeutic purposes* include local applications such as 2 per cent. tannic acid for colitis, quassia for threadworms (to some extent replaced by gentian violet capsules orally), and starch mucilage, 4 to 6 ounces (115 to 170 ml.) with tincture of opium, 15 to 30 minims (1 to 2 ml.), for diarrhœa. For a more systemic effect, in addition to the dehydration therapy already described, black coffee, 5 ounces (140 ml.), may be used as a stimulant; water and isotonic saline and glucose can be given for dehydration, and for anæsthesia bromethol, paraldehyde, and thiopentone may be given.

COMPLICATIONS

(1) Perforation of the bowel. This is avoided by using a catheter instead of a rigid nozzle.

(2) Burns from heat. The temperature of an enema must be 100°F. (37.8°C.) and no higher. Colostomy has been necessary for fibrosis from an enema given at too high a temperature.

(3) Burns from turpentine. This is avoided by adding olive oil.

(4) Enema rash from the soap (usually not very serious).

CONTRAINDICATION

The only contraindication to the administration of enemas is when a patient has had a resection and an end-to-end anastomosis in the large bowel.

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NOTES AND QUERIES

Poliomyelitis Vaccination

QUERY.—My little girl, aged 3, had her first injection of poliomyelitis vaccine last June. By the time her second dose was available there was an outbreak of poliomyelitis in the city, which continued on a large scale throughout the summer. Because of this, I hesitated to let her have the second injection. If I have her done now, will she only need one injection, or will she, after this long interval, need two injections as for primary immunization?

REPLY.—Probably it will only be necessary to give one injection to this child in the near future. The basal protection laid down last June is likely to enhance the response to this further immunization. The questioner says he hesitated to give the second injection of vaccine last summer owing to the presence of an epidemic. He will be interested to know that, in the United States, close contacts of a case of poliomyelitis have been inoculated with impunity; there has been no indication of any provocative effect whereby the vaccine predisposes to a clinical attack.

H. J. PARISH, M.D., F.R.C.P.ED.

Poliomyelitis Vaccination in Pregnancy

QUERY.—Poliomyelitis vaccine is now being offered to pregnant women. Is it not possible that vaccination may have a noxious effect on the fœtus?

REPLY.—The Ministry of Health is now making poliomyelitis vaccine available for pregnant women, since they appear to be unduly susceptible to the disease. The risk of untoward reactions after formaldehyde-inactivated (Salk-type) prophylactic is negligible, and there is no evidence of any harmful effect on the fœtus.

On the contrary, the infant should benefit by having some maternally conferred immunity at birth. This protection is passive and of short duration—wherefore the need for active immunization of babies in accordance with the Ministry's scheme.

H. J. PARISH, M.D., F.R.C.P.ED.

'Burning' Lips

QUERY.—I have a female patient, aged 55 years, who complains of a burning pain in the lips, especially on awakening. The lips at this time appear to be dry, but are readily moistened. Examination reveals nothing abnormal, except that at times a yellowish discoloration can be seen just inside the mouth on the upper lip—this does not persist. The patient's lower lip shows numerous minute white or grey bodies about the size of a pin-head—these are *not* yellow. The tongue seems normal and is not sore; there are no cracks or fissures in the tongue or lips (? Fordyce's disease). The patient has had an asymptomatic achlorhydria for many years, and has been maintained on small daily doses of thyroid most of her life, for (alleged) mild myxœdema. She also has chronic but mild 'neuro-dermatitis' on the anterior aspect of both wrists. She has a slightly increased blood pressure for which she has not received treatment (176/96 mm. Hg).

Treatment so far has been on the lines of stopping all lipsticks and so on, in case there is some allergy to cosmetic agents; a full course of vitamin therapy, especially B complex and B_{12} and C. Slight dyspepsia was treated first with hydrochloric acid, which made the discomfort worse, then with tablets of 'bardase'. The stomach discomfort, never severe, slowly passed off. She is now on a placebo of aluminium hydroxide tablets, which have not made any difference to the presenting symptom.

I should be grateful for suggestions on diagnosis and treatment. The condition has persisted for nearly a year, and so far has not been helped by any of the steps taken.

REPLY.—So many reasonable possibilities have already been considered that one cannot feel very sanguine about a favourable outcome to any further suggestions. I think Fordyce's disease (sebaceous gland tumours) has been correctly identified, but this would have no bearing upon the symptom in question.

I note that in respect to allergy to 'lipsticks' is added 'and so on'. Unhappily, the number of possible agents in the cosmetic world is literally unlimited and in a sensitized subject the slightest contact, e.g. from nail varnish, might be responsible. Vitamin deficiency seems to have been adequately considered, and the statement that 'hydrochloric acid made the discomfort worse' hardly encourages the trial of the really adequate dosage required to replace an achlorhydria. Doubtless the teeth have been exonerated, although in the absence of gingivitis a dental cause is most unlikely. Is the patient a cigarette smoker? Apart from the mechanical element, chemical hypersensitiveness might play a part.

If a blood count encourages it, a course of iron might help: I recall a somewhat similar condition in a subject with the Plummer-Vinson syndrome. And—as an empirical suggestion—hydrocortisone ointment.

SIR ADOLPHE ABRAHAMS, O.B.E., M.D., F.R.C.P.

Diabetes Mellitus

QUERY.—In a case of diabetes mellitus, can one roughly estimate the blood-sugar level from the percentage of urinary sugar? Is there any clinically significant relationship between the number of insulin units used and the amount of glucose in a case of metabolized diabetes?

REPLY.—Provided that the renal threshold is normal (or known) and due allowance is made for the time lag between blood and urine sugar values, a fair indication of blood sugar level can usually be obtained from reliable urine tests. It is important that the bladder should be emptied half to one hour before the test is made so as to get rid of urine that has been in the bladder since the previous meal.

There is no constant relationship between units of insulin and grammes of carbohydrate metabolized, as so many other factors come into this equation; e.g. it is well known that carbohydrate starvation reduces the efficiency of insulin in this respect and it is possible, though not so certain, that ketosis does the same.

W. G. OAKLEY, M.D., F.R.C.P.

Opium Addiction

QUERY (from a reader in Hong Kong).—Opium addiction is very commonly met with in medical practice in the Orient. I have treated such patients by gradually reducing the dosage of tincture of opium over a period of ten days. As psychotherapy is not readily available, most of the patients become addicts again after a couple of months.

I should be grateful for advice regarding the detailed methods of treatment of opium addicts by drugs and if possible by psychotherapy. I have heard that hyoscine hydrobromide is quite effective in treating these patients.

REPLY.—If the questioner is able to wean drug addicts of opium by reducing the preparation

which they are taking over a period of ten days to nil, then he is doing extremely well and is presumably dealing with addicts of a mild type. That is to say, it suggests that they have not taken at any time really large quantities of opium. We are not told whether at any time they suffer from any abstinence symptoms but presumably they do not and in that case no other treatment is needed, and certainly no other drug. Assuming, however, that he is also referring to more severe cases in which abstinence symptoms develop, the best drug to use is methadone given by subcutaneous injection, 5 mg. three times a day for the first day and then the dose may be increased if the abstinence symptoms are severe, such as vomiting and diarrhœa. It is not often necessary to give more than 15 mg. three times a day, and within two days the dosage should be reduced fairly rapidly with the object of completely withdrawing the methadone within ten days to a fortnight at the outside. This is much better than hyoscine which had a vogue many years ago, but which is unsatisfactory and does not satisfy the craving of the addict, nor is it reliable in the prevention of severe withdrawal symptoms. Psychotherapy in general is extremely disappointing in dealing with drug addicts, for the recourse to drugs is usually the desire to escape some intolerable situation whether emotional or physical. This can readily be understood, but psychotherapy does nothing to relieve the cause. In dealing with drug addicts it must be remembered that success is very unlikely, almost impossible, unless the patient be in an institution where he can be thoroughly supervised. The subject is too vast to deal with in a simple answer but it is well summarized in 'Narcotics and Narcotic Addiction' by Maurer and Vogel (Charles C Thomas, Springfield, Illinois, 1954).

A. H. DOUTHWAITE, M.D., F.R.C.P.

Backache

QUERY.—A patient, aged about 30, had a right nephrectomy in 1949, and has been troubled with left renal pain since her confinement three years ago. She has had treatment for recurring attacks of cystitis. The genito-urinary surgeon has pronounced the kidney normal, though enlarged, and has returned her to the gynæcological department for treatment of her cervicitis. They have told her that the left kidney ache is due to the enlargement of that kidney. I do not share this view and should be grateful for expert advice.

REPLY.—It is always difficult to be sure whether or not an ache in the loin is arising in a kidney. After the removal of one kidney it is usual for the remaining organ to become slightly larger but this is not accompanied by pain. If the kidney is indeed normal it is not responsible for the pain. Backache following a confinement is by no means unusual and I would suggest that search should be made for another cause for the pain.

A. W. BADENOCH, M.D., F.R.C.S.

The Sterile Marriage

QUERY (from a reader in Cyprus).—A patient, aged 36 years, married two years, has failed to conceive. Since marriage she has complained of irregular menstruation: most cycles 18 to 21 days, but with long periods of amenorrhœa, when she used 'descron'. Nothing abnormal was discovered on physical examination. Basal temperature charts and vaginal smear examinations show no evidence of ovulation. She was treated with serum gonadotrophin, 400 i.u. of 'gestyl' on the 11th, 13th and 14th days of the cycles, together with vitamin B_6. During the first two courses of treatment she had two normal cycles with menstruation on the 28th day, but the temperature chart did not show a satisfactory rise of the basal temperature during the second half of the cycles. Although the treatment was continued, in the third cycle menstruation began on the 15th day and in the four cycle, on the 18th day. Now, in the fifth cy of treatment, on the 19th day no rise of b temperature has occurred.

What further treatment should be institut and what is the prognosis? This couple are mo anxious to have children.

REPLY.—Without physical examination of the patient, it is difficult to give a reply but, basing the answer entirely on the information given, I should say first that the prognosis is bad and, since much investigation and treatment may be necessary, in the first instance the husband's semen should be tested, since the fact that the woman does not ovulate does not prove that the husband's spermatogenesis is satisfactory, or that he is capable of depositing the sperms in her cervix. Before any prolonged investigation of the woman is undertaken, the husband should be examined since if, by any chance, he is proved to be sterile, then obviously the woman is better left alone.

So far as the woman herself is concerned, in the first instance she must have an x-ray of the pituitary fossa to make sure that there is no gross abnormality of the pituitary gland, and her basal metabolic rate should be assessed. Assuming that these two are normal I would suggest the administration of ½ grain (30 mg.) of tablet of thyroid B.P. daily. Further treatment should consist of the gonadotrophins, which of course she has already had, but she

has had no luteinizing hormones and I would suggest the following dosage: one 400 I.U. injection of 'gestyl' on days 7, 8, 9, 10 and 11 of each cycle and one 500 I.U. injection of 'pregnyl' on days 16, 20 and 24. In such cycles she should consider days 12, 13 and 14 as her fertile days and act accordingly. It might also help if, in addition to the above treatment, she took one 0.01 mg. tablet of ethinylœstradiol daily from days 8 to 14 of the cycle.

If this medical attack should fail, then on one or two occasions I have had success by getting a deep x-ray therapist to give stimulating doses to the ovaries and pituitary. In any case it would be well worth while consulting a deep x-ray therapist in her area.

R. CHRISTIE BROWN, M.B., M.S., F.R.C.S.

Antiseptic for Portable Syringe Container

QUERY.—Could you tell me what antiseptic you recommend for pocket syringe containers? This must be harmless for the patient and for the metal of the sheath and the syringe itself, and efficient for its purpose.

REPLY.—I am very much against the use of an antiseptic for the sterilization of a syringe, and would suggest that it be invariably boiled every time it is used, and before it is employed for the next patient. In such circumstances there is no need for antiseptic in the container at all, and the syringe can be carried dry provided the container is properly closed.

If for some reason it is preferred that the syringe be carried in a fluid to protect it from contamination, the only fluid I can countenance would be alcohol. This is not likely to do harm if it becomes mixed with most injection fluids, and if a dry syringe is required it evaporates reasonably soon. Its antiseptic qualities are, however, so weak that it must not be used for the sterilization of a syringe in between patients. Any stronger antiseptic which would sterilize the syringe more efficiently should not, in my opinion, be used at all, because it would have to be removed by washing before the syringe could be used.

PROFESSOR RONALD HARE, M.D.

PRACTICAL NOTES

uffered and Unbuffered Aspirin

s a result of a careful clinical trial comparing a rapidly disintegrating unbuffered' tablet of aspirin and one containing the same amount of aspirin combined with small amounts of dihydroxyaluminium aminoacetate and magnesium carbonate, R. C. Batterman (*New England Journal of Medicine*, January 30, 1958, **258**, 213) reaches the conclusion that 'these antacids serve no useful purpose as constituents of the tablets studied and that inclusion of them with acetylsalicylic acid offers no advantage over aspirin alone'. The times required for analgesia and the frequency of gastro-intestinal intolerance were identical for both preparations. The trial comprised 160 patients and included studies of the effects of a single dose, a daily dose, short-term and long-term administration. In none of these was it possible to distinguish between the two preparations, from the point of view of either analgesic effectiveness or gastro-intestinal tolerance.

An essentially similar conclusion is reached by G. A. Cronk (*Ibid.*, p. 219) from a comparison of a 'commercial buffered preparation' of aspirin and a tablet containing aspirin alone. In a double-blind study of 667 doses of unbuffered aspirin and 757 doses of buffered aspirin, no statistical difference was found in the time required for the relief of pain, the duration of relief, or the degree of relief. Gastro-intestinal symptoms occurred in 0.4% of those receiving the buffered tablet and in 0.7% of those receiving the unbuffered tablet. When the five patients who stated that gastric symptoms always followed the ingestion of unbuffered aspirin, but never buffered aspirin, were given unbuffered aspirin in a tablet identical with the buffered one, no gastric symptoms occurred.

A New Anticoagulant

FOLLOWING clinical trials with the new anticoagulant, 3 - (1 - phenylpropyl) - 4 - hydroxycoumarin ('marcoumar'), Jean-Marie Delage and others (*Canadian Medical Association Journal*, January 1, 1958, **78**, 43) 'have been brought to recognize the efficacy and safety of this new coumarin', which appears to be 'absolutely devoid of toxicity'. Over a period of seventeen months they treated 50 patients including those with myocardial infarction, acute coronary insufficiency, angina pectoris, thrombophlebitis and arterial occlusion. Patients usually started treatment while in hospital, and were subsequently treated as outpatients. The Quick prothrombin time, pro-accelerin (factor V) and proconvertin (factor VII) were determined at the

beginning of treatment. The initial dosage was 18 mg., but this was increased to 21 to 24 mg., except in those patients whose Quick prothrombin time was as low as 60 to 75%, who were given only 9 to 12 mg. initially. The drug takes effect some 36 to 60 hours after the initial dose and the prothrombin time is lowered to 'a therapeutic range' in an average of forty-eight hours. Maintenance dosage ranged from 1.5 to 6 mg. a day, but was subject to constant review. Once the maintenance dose was established the prothrombin time was checked at intervals of 8 to 15 days; in some patients this was only necessary every three or four weeks. In the occasional patient who showed an excessive fall in prothrombin time during treatment, vitamin K_1 ('koniakon') was prescribed as a prophylactic measure and it was found that 1 to 3 ampoules in a sweetened liquid brought the prothrombin time back to a safe level within eight to twenty-four hours. The period of treatment varied from eight to twenty days in patients with thrombophlebitis but extended to over twelve months in some cases of coronary disease. As a safety measure, patients on a lengthy course of treatment always carried with them two ampoules of oral vitamin K_1, or an injectable ampoule. It is emphasized that treatment with long-acting anticoagulants cannot be safely undertaken unless vitamin K_1 is available. 'Over thousands of days of medication, the authors have noted only four minor hæmorrhagic accidents, two of which could easily have been avoided'.

Steroids in Nephrosis

'INTENSIVE and prolonged intermittent treatment with steroids and antibiotics now seems to be the treatment of choice for the nephrotic syndrome', according to E. C. Burke (*Proceedings of the Staff Meetings of the Mayo Clinic*, January 8, 1958, **33,** 12), as a result of a survey of 61 children with the nephrotic syndrome, treated in this way, and followed for periods ranging from seven to fifty-five months. Treatment initially consisted of admission to hospital for a ten-day course of corticotrophin—150 mg. per square metre daily. Later the course was reduced to eight days. The children also received extra potassium chloride—1 g. daily—as well as penicillin or tetracycline in 'prophylactic or therapeutic doses'. On discharge from hospital intermittent steroid therapy was started: 100 mg. of cortisone daily on three successive days every week for six weeks or longer if albuminuria persisted. Later, cortisone was replaced by prednisone: 5 mg. four times daily on three successive days every week. When albuminuria recurred, steroid therapy was restarted. Penicillin was given orally in a dosage of 100,000 to 200,000 units daily for an indefinite period. Full activity was permitted, as was a general diet with exclusion of extra salt and salty foods. The follow-up showed that of the 61 children seen from September 1953 through 1956, in whom follow-up reports were available in September 1957, 13 had died, 26 had neither albuminuria nor œdema, 17 had no œdema but some albuminuria, and five had both œdema and albuminuria. In other words, 21% had died, 71% were in clinical remission, and 8% were in clinical exacerbation. Death was usually due to chronic nephritis rather than infection.

Hydrocortisone in Pruritus Vulvæ

SATISFACTORY results are reported by Rita S. Finkler (*American Journal of Obstetrics and Gynecology*, February 1958, **75,** 319) in the treatment of vaginal and vulvar pruritus from the use of vaginal tablets containing 10 mg. of hydrocortisone free alcohol in a carbowax base. Patients were instructed to insert a tablet deep into the vagina once daily. In more severe cases one tablet twice daily was prescribed for the first two or three days. In over 77% of 40 patients treated, the pruritus was 'practically eliminated', whilst in another 7% 'some degree of benefit was ultimately achieved'. Relief of pruritus usually occurred dramatically within the first twenty-four hours of treatment, and was equally effective at all ages (the ages of the patients treated ranged from 17 to 74 years). No side-effects were encountered. The conclusion reached is that vaginal tablets of hydrocortisone are 'a safe and uniformly effective method of relieving genital pruritus in women'. When such treatment 'is combined with therapy effective against the underlying cause of the disorder it can achieve complete and lasting relief within twenty-four hours in most cases'.

A Tar-Steroid Cream

A COAL-TAR cream ('tarcortin') containing 5% 'special coal tar extract' and 0.5% hydrocortisone in a 'non-greasy, stainless hydrophilic cream' is claimed by A. L. Welsh and M. Ede (*Journal of the American Medical Association*, January 11, 1958, **166,** 158) to have a threefold effect ('anti-pruritic, anti-eczematic, and anti-inflammatory') in the treatment of certain dermatoses. It is said that 'this synergistic tar-steroid combination is more effective than either the alcoholic extract of crude coal tar in cream form or hydrocortisone alone'. In a series of 367 cases they found that they obtained 'prompt and satis-

factory response' when they used this cream in patients 'presenting very acute episodes of atopic dermatitis, contact dermatitis, psoriasis, chronic infectious eczematoid dermatitis, and other eczematous dermatoses'. The major advantage of the cream is that it brings the acute phase rapidly under control and so 'tides over' the patient until the antipruritic and anti-eczematic effects of tar therapy can be exerted. At this stage they switch over to a coal-tar preparation without hydrocortisone.

Obstetric Anæsthesia

THAT 'the production of a pethidine and chlorpromazine hypo-æsthesia might prove to be the answer to our main problems in anæsthesia for obstetrics' is the view advanced by J. Selwyn Crawford (*British Medical Bulletin*, January 1958, **14**, 34). For forceps delivery a mixture of pethidine (150 mg.) and chlorpromazine (50 mg.) in 15 to 20 ml. of solution is given by slow intravenous injection. The patient is allowed to settle down for ten to fifteen minutes, and is then placed in the lithotomy position. It is helpful to infiltrate the line of the episiotomy with about 10 ml. of 1% lignocaine before starting the operation. It is stated that 'although about 20% of patients appear to offer some protest during delivery, in all the cases so far encountered there has been amnesia for the whole event'. The mothers are rather drowsy for two or three hours after operation, but may be engaged in conversation. No nausea, vomiting, or 'alarming changes' in blood pressure have been encountered. The method is considered safe for the child. Highly nervous and excitable women do not respond well. The final conclusion is that 'the pethidine and chlorpromazine combination appears to offer the possibility of a considerable advance in anæsthesia for obstetrics, especially for domiciliary practice or in small country districts'.

Quadriceps Hæmatoma

HÆMATOMA of the quadriceps is a common rugger injury which is often incorrectly treated, according to R. M. Mitchell (*New Zealand Medical Journal*, December 1957, **56**, 687). In reviewing 25 cases treated in the orthopædic unit of the Dunedin Hospital during the last two years, he notes that the history is commonly a severe blow on the anterior surface of the thigh by an opponent's shoulder in a flying tackle. The hæmatoma was usually situated in the medial or anterior portion of the thigh as a firm tender swelling. Thigh circumference was commonly increased 1½ to 2 inches (4 to 5 cm.) at the level of the hæmatoma. Flexion of the knee was severely limited, and in nine cases there was an effusion into the knee. Ossification occurred in five cases, in all of which treatment had been inadequate. Rest is the essential principle of treatment. Eleven of the cases were considered severe enough to justify inpatient treatment, and they were confined to bed with the leg at complete rest in a Thomas splint. A firm crêpe bandage on the knee was used to assist absorption in cases with a knee effusion. As the hæmatoma resolved gentle active flexion of the knee was allowed. On no account was forced flexion or massage of the thigh allowed. The duration of treatment averaged four and a half weeks, but full flexion of the knee was commonly delayed for many months. The less severe cases were treated by 'ambulation using a wooden posterior knee splint to prevent flexion of the knee. These cases commonly resolved in two to three weeks. In cases not seeking medical treatment and in which flexion of the knee was not prevented, recurrence of the hæmatoma with eventual ossification was the rule'.

Orthopædic Auscultation

'A SIMPLE and accurate means of quickly determining the presence or absence of a fracture of the femur or a dislocation of the hip', according to L. F. Peltier (*G.P.*, January 1958, **17**, 109), is to place a stethoscope firmly on the symphysis pubis and strike the patella lightly with a finger. Normally the sound is transmitted through the bony substance of the femur. If there is any break in the continuity of the bony column—e.g. a fracture of the femur or dislocation of the hip—there is a diminution of the sound heard on auscultation, which can be appreciated by comparing the sounds produced on striking each patella in turn. To carry out this test the patient should be lying supine with the legs in a symmetrical position, unencumbered with heavy dressings or blankets. The diminution in sound is not dependent upon displacement of the fragments, but can be detected even in impacted abducted fractures of the neck of the femur. It is claimed that 'any ear attuned to the discrimination of heart sounds and murmurs can easily distinguish' the difference.

Treatment of Hæmochromatosis

HÆMOCHROMATOSIS is a condition characterized by a chronic disturbance of iron metabolism, whereby more iron is absorbed by the bowel than is lost by the normal means of iron excretion. The resulting deposits of iron in the liver and pancreas cause considerable damage to

these organs. Of recent years, treatment has consisted of repeated bleeding of the patient in an attempt to deplete these pathological stores of iron. As used hitherto this has proved a tedious form of therapy. With two to four bleedings a month it requires two to four years to get rid of the accumulated iron—which amounts to 25 g. or more. Meanwhile progressive damage is being caused to liver and pancreatic function. W. H. Crosby (*British Journal of Hæmatology*, January 1958, **4**, 82), of the Walter Reed Army Institute of Research, has now reported a case in which 109 phlebotomies were performed in 46 weeks, resulting in a total of 55 litres of blood being removed over a period of eleven months. At the end of this period the patient's iron stores were exhausted. The aim of treatment was to maintain the hæmoglobin concentration of the blood at 10 to 12 g. In spite of the rapid loss of protein, the patient remained in protein balance except for a short period during the first few weeks of treatment when he developed hypoproteinæmia and œdema of the ankles. During the course of treatment the patient—an army officer—remained on duty except for the first few weeks, and there was marked improvement in his diabetes.

Neomycin in Ophthalmology

'A HIGH proportion of ocular infections today are due to penicillin-resistant strains of *Staphylococcus aureus* or to gram-negative bacilli insensitive to penicillin', according to Arnold Sorsby and Joseph Ungar (*Annals of the Royal College of Surgeons of England*, February 1958, **22**, 107), and there is therefore a need for an agent which is effective for these types of infection. In rabbits they have found that subconjunctival injections of neomycin are well tolerated and are effective against corneal infections due to penicillin-resistant strains of *Staphylococcus aureus* and to *Ps. pyocyanea*. In addition, they proved as effective as penicillin for the treatment of intra-ocular infections produced by the pneumococcus, *Streptococcus hæmolyticus*, and penicillin-sensitive *Staphylococcus aureus*. Although clinical experience with this form of therapy is 'as yet scanty', preliminary clinical trials have shown that 0.5 g. of neomycin in 0.75 ml. water, to which 0.25 ml. adrenaline (1:1000) has been added, is 'well tolerated, and that at least four repeated injections can be given at intervals of twenty-four hours without undue discomfort or toxic effects'. The view is expressed that, used in this way, neomycin is 'a satisfactory method of treatment of the intra-ocular infections seen today'.

A New Anti-Leprosy Drug

As a result of the findings in 167 patients in Nigeria, followed for periods of up to thirty-two months, T. F. Davey (*Leprosy Review*, January 1958, **29**, 25) states that 'it is the opinion of all those taking part in these trials that in DPT we have an anti-leprosy drug of considerable potential importance, a drug which combines a noteworthy freedom from toxic side-effects with chemotherapeutic activity of a high order. In a dosage of 25-40 mg. per kilo its activity is quite as great as that of DDS and sometimes surpasses it, and after thirty-two months of experience there is no evidence of the development of drug resistance'. DPT is a diphenyl thiourea compound with the formula: 4-butoxy-4-dimethylaminodyphenyl thiourea. Children tolerate it well in the same dosage per kilo as adults, which in practice means a daily dose ranging from 0.5 to 1.5 g. in accordance with age. The lack of toxicity displayed by DPT is 'one of its outstanding virtues' and it has been well tolerated by patients hypersensitive to both the sulphones and thiosemicarbazone. It can be combined safely with DDS and isoniazid, 'the combination having a very satisfactory chemotherapeutic action during the first year of treatment'. The view is expressed that 'on the basis of experience so far DPT is considered to be the drug of choice when an alternative is needed to DDS', whilst 'in the treatment of the individual patient DPT promises to be a serious rival to DDS'.

Pyrimethamine in Malaria Prophylaxis

SUCCESSFUL results from the use of pyrimethamine in malaria prophylaxis in Western Tanganyika are reported by D. F. Clyde (*East African Medical Journal*, December 1957, **34**, 647). The drug was administered weekly to school children in a dosage of 25 mg. for those aged 7 to 10 years, and 37.5 mg. for those aged 11 to 12 years. The trial was initiated by giving three weekly doses to 93 children, whose parasite rate was 45%. *Plasmodium falciparum* predominated, 97% of positive slides containing this species; *P. malariæ* and *P. vivax* appeared in 9% and 3% respectively. One week after the third dose had been given, blood examination revealed that none of the children retained peripheral asexual parasites, only a few subtertian gametocytes remaining. A nine-months' trial, involving a total of 174 children, maintained the parasite rate at zero and no evidence of drug resistance was found.

REVIEWS OF BOOKS

High Arterial Pressure. By F. H. Smirk, M.D., F.R.C.P., F.R.A.C.P. Oxford: Blackwell Scientific Publications, 1957. Pp. xxxvi and 764. Illustrated. Price 75*s*.

If there is one thing we have learned during the last ten years it is that it is one of the easiest things in the world to lower the blood pressure of a hypertensive individual. Unfortunately, what has become equally obvious is that such a process—at one time considered a consummation devoutly to be desired—may be to anything but the benefit of the patient. As the profession has swayed hither and thither—like the proverbial weathercock—amid this barrage of hypotensive agents, there has been one steadying influence—that of Professor Smirk. Possibly helped by the relative isolation of Dunedin, he has consistently refused to be influenced by either the extravagant pæons of the introducers of the 'latest' drug or the jeremiads of those who were rash enough to accept the original claims without question.

From the mass of careful observations which he and his colleagues have collected he has now distilled this *opus magnum* which, it is safe to say, will long remain the standard work on the subject. Whilst half this book is devoted to therapy, all the other aspects of high blood pressure are fully reviewed. It is no criticism of the author—rather is it a tribute to his clinical acumen and intellectual integrity—that he has no solution to the etiological problem of one of the most important health hazards of the present day. What he has done is to produce a comprehensive, judicial and stimulating review of the available evidence which provides the clinician with sound advice in the use and current status of hypotensive therapy, and the research worker with a new front line from which he can plan the next stage in the attack on the problem of high blood pressure. One minor criticism is the inadequacy of the index. In preparing the next edition, which will undoubtedly be called for, would it not be possible to abbreviate the absurdly long list of contents (28 pages) and double the length of the index?

Chronic Bronchitis, Emphysema and Cor Pulmonale. By C. H. Stuart-Harris, M.D., F.R.C.P., and T. Hanley, M.D., M.R.C.P. Bristol: John Wright & Sons Ltd., 1957. Pp. v and 245. Figures 61. Price 42*s*.

The work of Professor Stuart-Harris and his staff in the department of medicine of the University of Sheffield is well known to those interested in chronic bronchitis and, though there are many problems yet to be solved, ten years of research studies are here recorded in a monograph. In addition, the authors have fully discussed the recent work of others in this field, the result being a lucid account of the subject.

The clinical picture, morbid anatomy and differential diagnosis of chronic bronchitis as well as its relation to bacterial and virus infection are fully described. The routine tests used in assessment of pulmonary function and their interpretation are clearly explained. Pulmonary heart failure and its pathological physiology is particularly well discussed. Treatment is dealt with in only 20 pages. Whilst advice on management is concise and the general principles of treatment adequately explained, in a future edition the authors could with advantage enlarge this section of the book. It is curious that in the treatment of the coma of hypercapnia no mention is made of the effect of an intravenous injection of 10 to 15 ml. of nikethamide, which stimulates the respiratory centre and often leads to a rapid return of consciousness. There is an excellent chapter on the epidemiology and pathogenesis of chronic bronchitis. The morbidity of this disease and its complications are very considerable in this country and practitioners will find much to interest them in this up-to-date account.

Orthopedic Surgery in Infancy and Childhood. By Albert Barnett Ferguson, Jr., M.D., *et al.* Baltimore: The Williams & Wilkins Co.; London: Baillière, Tindall & Cox Ltd., 1957. Pp. xii and 508. Figures 504. Price £6.

The authors state in the preface that their object in writing this book is to gather under one cover details regarding the many odd syndromes encountered in orthopædic surgery dealing with infants and children. In this way they hope to make it unnecessary for pædiatricians and residents to amass the subject-matter of orthopædic surgery by laboriously running from text to text or article to article. In what they have written, they have relied not on any second-hand knowledge but on personal experience. It can be said with confidence that it achieves this part of its objective. But one difficulty is constantly present. Orthopædic surgery is concerned with both children and adults. Many conditions found in adults are only the results of those beginning in childhood. The division must therefore be more or less artificial and is not to be encouraged. The other difficulty is that in a relatively short book covering such a wide field, much that is written must be rather sketchy

in character. Many forms of treatment are mentioned but it is impossible to give enough detail to enable them all to be carried out without reference to other sources. Some sections of the book are excellent. There is a long and interesting chapter on diseases of the bone which is clearly written and which will be of value to all dealing with conditions occurring in children. Apart from the fact that it does not mention posture as such, the section on the spine gives a comprehensive view of the problems which have to be solved in dealing with the various deformities which occur.

There is no doubt that the book will serve a useful purpose but the young orthopædic surgeon or the young resident who is hoping to become an orthopædic surgeon will be well advised to consult standard textbooks for their primary knowledge, adding, as their experience increases, this book. They will find that it contains many useful and important facts and observations.

The Mentally Ill Child. By STEVEN B. GETZ, PH.D., and ELIZABETH LODGE REES, M.D. Springfield, Illinois: Charles C Thomas; Oxford: Blackwell Scientific Publications, 1957. Pp. xiv and 88. Price 25*s.*

THE publishers' blurb, on the cover of this little book, claims that it is 'The first book written for parents of children diagnosed as Schizophrenic; Autistic; Severely Emotionally Disturbed'. Fortunately, such children are rarely met and the public for whom the book is written must be correspondingly limited. It gives unobjectionable advice and explanation which is likely to be of considerable help to parents or relatives of these emotionally abnormal children and which may be read with benefit by any doctor who is not a specialist in this field. The trouble is that this is necessarily a brief and superficial account of an extremely difficult subject and one in which it is all too easy to go wrong. It may well be better for the parent who is intelligent, patient and sympathetic enough to be capable of bringing up such a child to come really to grips with all that is known about the problem by reading all that he can about it. The same may be said for the family doctor if he is not going to do more harm than good by well-intentioned, but ill-thought-out, advice.

The authors are American, and a certain amount of the book itself is occupied with problems of finance and institutional care which are not relevant in Britain, and the more purely medical chapters are not very satisfactory. The authors do, however, give a great deal of sound advice and possession of this book will at least enable the bewildered parent or doctor to have some guidance and some background against which to assess advice given by others.

Deafness, Mutism and Mental Deficiency in Children. By LOUIS MINSKI, M.D., F.R.C.P., D.P.M. London: William Heinemann Medical Books Ltd., 1957. Pp. viii and 82. Figures 13. Price 7*s.* 6*d.*

THIS book provides some answers to the anxious question 'Why isn't my child talking yet?' Three important answers, discussed in this book, are that such a child may be either deaf, emotionally disturbed or mentally defective, and it points the way to differentiating between these. Misdiagnosis still occurs with young children, the most common error being to write off a child as mentally defective when he is, in fact, partially deaf and emotionally disturbed. These three aspects need careful and early assessment, since the treatment is different in each, and urgent in the case of the deaf and the disturbed. Dr. Minski's book is particularly concerned with an inpatient unit for research into, and assessment of, unusual young children who lack speech and social maturity and are suspected of being deaf. The majority of cases, however, can be diagnosed and treated by outpatient audiology units, provided they are referred before their difficulties have become too severe. Such early referral depends largely upon the skill of the family doctor and this short book will be of considerable help to him.

Stammering and its Treatment. By FRANKLIN BROOK, L.C.S.T. London: The Pitman Medical Publishing Co. Ltd., 1957. Pp. ix and 134. Price 21*s.*

THIS book can be heartily recommended to the practitioner for it gives a reasonable account of the etiology and a lively account of the various methods of treating the condition. There is a good chance of a satisfactory result by the end of two years if there is cooperation between the patient, the speech therapist, the patient's family, the schoolteacher, and nowadays even his fellow pupils. There are few areas now in the United Kingdom without a local speech therapy clinic with a qualified therapist. Children under the age of seven are for the most part treated indirectly through contact with their family and school, but, over that age, relaxation exercises, the practice of rhythmic and effortless speech, the practice of voluntary and 'fake' stammering, suggestion, and the institution of Free Speech Clubs, have all contributed to the present improvement. This able book is written with the enthusiasm of a self-cured stammerer.

Management of Complications in Eye Surgery. Edited by R. M. FASANELLA, M.D. Philadelphia and London: W. B. Saunders Co. Ltd., 1957. Pp. xv and 422. Illustrated. Price £5 12*s*.

IT might be wondered whether a book with this title would turn out to have been written by an elderly surgeon not afraid to confess that in his long career he had encountered every misfortune, or by a young man who thinks he has the answers to all the problems. It proves in fact to have been compiled by a number of the best American ophthalmic surgeons, each of whom has clearly given careful thought to his contribution. It is impossible to discuss briefly a work of this type. Most of the suggestions are those which would occur to an experienced surgeon in any country. An impression that the authors are somewhat impetuous and dynamic in their reaction to some minor difficulties which Nature and patience might resolve is probably false and due to the need to give positive instructions in a book. Some complications which are discussed at length, such as delayed postoperative re-formation of the anterior chamber, are perhaps less common in Great Britain.

Most textbooks of surgery describe the technique for standard operations and are for the student. This is like a sequel to a novel—it is for the experienced surgeon designed to help him out of unexpected difficulties. It is a most stimulating work.

The Clinical Application of Hormone Assay. By JOHN A. LORAINE, M.B., PH.D. ED., M.R.C.P.ED. Edinburgh: E. & S. Livingstone Ltd., 1957. Pp. xii and 368. Figures 66. Price 30*s*.

THE increasing availability of quantitative techniques for the assay of various hormones in body fluids is an important indication of progress in endocrinology, and in most cases suitable standards are available for reference. Techniques, however, are still in use, which, by modern criteria, cannot be said to be quantitative and the results of which are often measured in indeterminate 'animal units' without reference to a standard substance. The most desirable form of assay is the chemical determination of single substances, for example the œstrogens, or of a group of metabolites as in the case of some methods for adrenal steroids. In many other cases more difficult and less precise procedures of bio-assay must be relied upon. The appearance of an authoritative appraisal of the current position is therefore most timely. The book naturally begins by setting forth the criteria applicable before any method can be considered reliable. The value of this section to many would be enhanced by more detailed statistical consideration. With the established criteria in mind the author attempts the difficult task of indicating the accuracy of the methods and the validity of physiological and pathological conclusions drawn from their use. The author being a member of the Clinical Endocrinology Research Unit at Edinburgh has naturally stressed many aspects of the work of that unit, with the result that the best and most comprehensive chapters concern the gonadotrophins, œstrogens and metabolism of progesterone.

This book should be of considerable value to many readers whose interest is in the technical problems of hormone assay and to more who really wish to know how far existing knowledge of the hormonal status of some physiological and many pathological states can be relied upon.

Biochemical Contributions to Endocrinology. By SIR CHARLES DODDS, M.V.O., M.D., F.R.S. Stanford, California: University Press; London: Oxford University Press, 1957. Pp. 76. Figures 28. Price 18*s*.

THE five essays which form the substance of this book were prepared for publication from the Lane Medical Lectures, delivered by the author at Stanford University in 1956. They represent a review of the work of the author and his colleagues at the Courtauld Institute of Biochemistry in the Middlesex Hospital during the past thirty years; the importance of this is already widely recognized. Priority is naturally given to his research work on the preparation of synthetic œstrogens. One chapter is devoted to an account of the discovery of aldosterone by Simpson and Tait, and an account is included of the important clinical implications of this biochemical 'tour de force'.

The author touches on some of his other earlier interests. These include the metabolic effect of the polynitrophenols, and the relation between the pituitary on the one hand, and the secretory activity of the intestine and peptic ulcer on the other. With the exception of some of the technical details, this volume should be of value to anyone with even a superficial interest in science and medicine.

NEW EDITIONS

Medicine: Essentials for Practitioners and Students, by G. E. Beaumont, D.M., F.R.C.P., D.P.H., seventh edition (J. & A. Churchill Ltd., 45*s*.).—It is five years since the last edition of this well-known textbook appeared and this present edition has been extensively revised to bring it up to date. 'Beaumont' is one of the few remaining textbooks on medicine by a single author, and as such it has the advantage of preserving a continuity of style and treatment

which is often lacking in books by a number of contributors. With the exception of psychiatry and dermatology the whole range of internal medicine is dealt with in a lucid and up-to-date manner, a task which could have been successfully undertaken only by a physician of exceptional erudition and experience. Among the vast amount of information provided very little was noticed that is open to criticism. In 'pernicious anæmia of pregnancy' vitamin B_{12} is not the treatment of first choice, and in 'acquired acholuric jaundice' no mention is made of steroid therapy.

Outline of Orthopædics, by John Crawford Adams, M.D., F.R.C.S., second edition (E. & S. Livingstone Ltd., 35*s*.).—Orthopædics is one of the biggest subdivisions of general medicine and surgery. It is far more than a surgical specialty. With these overlapping interests and the large content of social medicine and rehabilitation it touches the experience of every clinician. There is thus a place for a ready-to-hand outline available to registrars and house staff, to nurses and physiotherapists, to public health doctors and social workers and above all to the general practitioner of medicine. This book satisfies the need and is the best of its kind. We said as much when we reviewed the first edition. The fact that a second edition is required so soon proves how right we were. Many improvements have been made and by further pruning of redundancies the author has skilfully managed to avoid much increase of bulk. It remains a model of concise writing and a storehouse of readable information.

General Pathology, edited by Sir Howard Florey, M.D., F.R.C.P. F.R.S., second edition (Lloyd-Luke (Medical Books) Ltd., 84*s*.).—The first edition of this book, entitled 'Lectures on General Pathology', consisted of a series of stimulating accounts of selected topics. This edition is two hundred pages longer and twenty-one shillings dearer. New chapters have been added, on thrombosis, effects of injury on metabolism, atherosclerosis and tumours, and the new title indicates its wider scope. The change has made the book very much more useful. The first edition was most readable and stimulating but, since the average student today must carefully watch his expenses, one hesitated to recommend a book on general pathology that omitted all mention of, for instance, tumours. One can now recommend it without any such reserve.

So far as the undergraduate is concerned the limit to the usefulness on the book is now intellectual rather than financial. It is professedly designed 'for the better student'; and its detail of presentation and avoidance of didactic simplification will prove rather heavy going for the weaker brethren. But the better student, the postgraduate working for higher examinations, and the practitioner anxious to bring himself up to date on basic principles will find it admirable. The new edition, like the first, 'reflects the particular interests of the authors'. Sir Howard Florey has marshalled a team of contributors who write with the enthusiasm and authority of people who have made important contributions to their subjects and are thoroughly up to date in the relevant literature.

Fluid and Electrolytes in Practice, by Harry Statland, M.D., in its second edition (Pitman Medical Publishing Co. Ltd., 45*s*.), appears only three years after the publication of the first edition. In the face of the numerous competitors in this field, its success in meeting the demand for a concise monograph on the problems of fluid and electrolytes is therefore established. The approach is simple, straightforward and practical. The book is not for experts and should appeal to those whose real interests lie elsewhere but whose duties demand some familiarity with these problems. The details of diagnosis and treatment of specific conditions are preceded by a consideration of general principles. The orthodox but chemically inaccurate description of acid-base balance in terms of cation-anion imbalance leads the author into ionic confusion which will be shared by many readers. To the young graduate properly trained in the basic sciences the statement that in diabetic acidosis anions of ketonic acids bind plasma base and the 'displaced bicarbonate is buffered' is almost unintelligible. Apart from blemishes of this type the book will be valuable to the general reader.

Stedman's Medical Dictionary, edited by Norman Burke Taylor, M.D., F.R.C.S.ED., F.R.C.P. (CAN.), in collaboration with Allen Ellsworth Taylor, D.S.O., M.A., reaches its nineteenth edition (Baillière, Tindall & Cox Ltd., 88*s*.) completely revised, and brought up to date by the addition of several thousand new terms. A welcome innovation is that names of pharmaceutical preparations have been changed from Latin to English. To those who know 'Stedman's' nothing more need be said than that it is as good as ever. To those who do not know it all that need be said is that there is no better medical dictionary in the English language.

The contents of the May issue, which will contain a symposium on 'Diseases of the Skin,' will be found on page A 128 at the end of the advertisement section.

Notes and Preparations see page 513
Fifty Years Ago see page 517
Motoring Notes see page A83
Travel Notes see page A87

NOTES AND PREPARATIONS

NEW PREPARATIONS

'OTAMIDYL' ear-drops contain dibromopropamidine isethionate, 0.15% w/v, and diamidinodiphenylamine dihydrochloride, 0.5% w/v, in propylene glycol, and are intended for use in the treatment of otitis externa and chronic suppurative otitis media. It is stated that 'the antibacterial and antifungal properties of these compounds are retained in the presence of pus, blood, and tissue debris'. Supplied in 15-ml. dropper bottles and 100-ml. bottles. (Pharmaceutical Specialities (May & Baker) Ltd., Dagenham, Essex.)

'SPONTIN' contains ristocetin A and B and is indicated in the treatment of gram-positive bacterial infections, especially those resistant to other antibiotics. It is bactericidal 'in about the same concentrations at which it is bacteriostatic', and resistance is 'virtually unknown'. At present available in limited supply, in vials containing 500 mg. in powder form. (Abbott Laboratories Ltd., 3 Wadsworth Road, Perivale, Greenford, Middlesex.)

'TAMPOVAGAN "N" ' pessaries each contain 20 mg. of neomycin sulphate and are intended for use in combating vaginal infections, 'particularly those of mixed bacterial origin, that have up to now been resistant to other forms of therapy'. They are not active against fungi. Supplied in boxes of 12 pessaries. (Camden Chemical Co. Ltd., 61 Gray's Inn Road, London, W.C.1.)

PHARMACEUTICAL NOTE

SMITH & NEPHEW LTD. announce that their preparation of buphenine hydrochloride, 'perdilatal', is now available in an additional strength of tablet (6 mg.), to be known as 'perdilatal forte'. Issued in packs of 50, 250 and 1000 tablets. (Bessemer Road, Welwyn Garden City, Herts.)

FILM NEWS

THE *I.C.I. Medical Film Catalogue* 1958 is now available and gives details of all I.C.I. medical films (16 mm., sound) which are available on free loan for showing to approved medical audiences. Copies of the catalogue may be obtained from The Film Library, Imperial Chemical Industries Ltd., Imperial Chemical House, Millbank, London, S.W.1.

A SERIES of filmstrips dealing with *Domiciliary Care of the Premature Baby*, *The Operation of an Emergency Obstetric Unit*, *The Technique of Blood Transfusion*, *Ward Dressing Technique*, *Domiciliary Care of the Geriatric Patient*, *The Rideal-Walker Test*, and *The Chick-Martin Test*, has been produced by Reckitt & Sons Ltd. Full details, including price, may be obtained from The Pharmaceutical Department, Reckitt & Sons Ltd., Hull.

ROYAL SOCIETY OF MEDICINE

THE next meeting of the Section of General Practice will be held at 8.15 p.m. on Wednesday, April 16, when the subject for discussion will be 'Management of Practice'. The opening speakers will be Drs. H. G. Barnes, W. F. Hudson, J. D. Huntley, P. M. Higgins and Peter A. Walford, and Dr. Stephen Taylor will sum up.

FORTHCOMING CONFERENCE

The Nature of Stress Disorder will be the subject of a conference to be held at the Royal College of Physicians from May 2 to 4, 1958. Attendance will be limited in number, but a few places are still available. Applications should be sent to the Secretary, Society for Psychosomatic Research, 130 Harley Street, London, W.1.

NEW JOURNALS

Diseases of the Colon and Rectum is the title of a new journal to be published bi-monthly by the American Proctologic Society, under the editorship of Dr. Louis A. Buie, Sr., M.D., and the first issue, dated January-February, 1958, is now available. The journal is intended 'to provide a centralized source of authoritative information covering the current advance in the medical and surgical treatment of diseases of the colon, rectum and anal canal'. The annual subscription is £5. (Pitman Medical Publishing Co. Ltd., 45 New Oxford Street, London, W.C.1.)

Immunology, the first issue of which is dated January 1958, is the official journal of the British Society for Immunology and is edited by Professor J. R. Marrack. It will be published quarterly and the annual subscription is £3 (£2 to members of the Society). (Blackwell Scientific Publications, 24-25 Broad Street, Oxford.)

COMPETITION AWARD

THE second competition organized by the *Ernest and Minnie Dawson Cancer Trust* will take the form of a thesis on cancer, for which maximum prizes of £1,500 and £500 will be awarded. The closing date for the competition, which is open to doctors mainly engaged in general practice who practise and/or reside in Lancashire or Yorkshire, is May 1, 1959. Full details may be obtained from the Clerk to the Trust, The Ernest and Minnie Dawson Cancer Trust, 89a Fishergate Hill, Preston, Lancs.

THE BENGER PRIZES

As in 1957, the 1958 'Benger Prizes for original observations in general practice' will take the form of three awards of £250, £150, and £100. Medical practitioners actively engaged in general practice anywhere in the world are eligible to compete. The closing date for receipt of entries is July 31, 1958. Full details can be obtained from the College of General Practitioners, 54 Sloane St., London, S.W.1, or from Benger Laboratories Ltd., Holmes Chapel, Cheshire.

A selection of abstracts of the papers submitted for the 1957 prizes has now been published. Copies (price 5s.) can be obtained on application to Benger Laboratories Ltd. at the above address. The price covers the cost of publication, and any profits are to be presented to the College of General Practitioners for the benefit of general practice.

MENTAL HEALTH RESEARCH FUND

THE annual report of the Fund for the year ended September 30, 1957, reveals that since its inception in 1952 grants for research have totalled £50,623. Precedence is given to those projects and activities which seem likely to encourage cooperation between investigators 'who may be working in different places, trained in different disciplines and possessing different skills'. The amount of money raised during the year was £26,242, an increase of £1,642 over the previous twelve months.

MEDICAL SCHOOLS OF THE WORLD

THERE are now 638 medical schools in the world, according to the World Health Organization, of which 10 were founded before 1300 and 108 have been created during the last ten years. Together, they graduate annually more than 66 700 new doctors. As a rule the number of male students is far in excess of that of women. The most notable exception to this rule is the U.S.S.R., where women students are often two or three times more numerous than men. It is estimated that there are now approximately 1,200,000 qualified doctors in the world.

NORTHERN IRELAND

ACCORDING to the 9th annual report of the Northern Ireland Hospitals Authority for the year ended December 31, 1956, the total number of domiciliary consultations rose by 238 (1.7%), but the number of consultations in psychiatry increased by 69%. It is also reported that the number of nurses qualifying increased by about one-fifth from 414 in 1955 to 506 in 1956 but 'against this the number of nurses emigrating to Canada and the United States of America rose rapidly'.

SOCIAL SECURITY RECIPROCITY WITH AUSTRALIA

UNDER the agreement on social security signed recently by Mr. Macmillan and Mr. Menzies, and which comes into force on April 1, residence in the United Kingdom counts as residence in Australia and so enables emigrants from this country to qualify for Australian benefits. The new agreement covers family allowances and benefits for old age, widowhood, sickness and unemployment. One of the benefits of the agreement is that under it family allowances will be payable during the journey from one country to the other. These will be paid by the country from which the family is emigrating.

ATOMIC STERILIZATION OF CATGUT

A LINEAR accelerator is being used to sterilize catgut on a commercial scale in the United States, according to a report in the *Financial Times*. The machine, which costs about $250,000, and has a 7 million electron volt rating, is described as 'firing bursts of radioactive particles over sutures packaged in sealed containers, killing any contaminating micro-organisms, without injuring the sutures themselves, or making them radioactive'. The treated sutures are said to be about 10% stronger than those processed by heat sterilization, and the method has the further advantage of increasing the safety factor as the sutures are already packaged before treatment and therefore do not require to be handled after sterilization. The cost of the new technique is said to be comparable to that of heat sterilization.

'DANGEROUS AGES'

IN 1956 the most common age for marriage continued to be 23 for men and 21 for women, according to the recently published Civil Tables of the Registrar General's Review for 1956. Of the 352,944 men marrying, 120 were aged 16. The comparable number for women was 2,681. In 45 cases both bride and bridegroom were 16. There were 142 marriages where the bride and bridegroom were both 75 or over. Of the 655,069 women who bore a legitimate child in 1956 and who had been married once only, 1,368 had already had 10 or more live-born children and 96 of them were aged 45 or over. There were more divorces when both husband and wife were aged 30 to 34 than when they were of any other combination of ages.

MORTALITY OF AGED PEDESTRIANS

A COMPARISON of fatal road accidents in 18 countries, which has been carried out by the World Health Organization, comparing the average annual figures for 1950-52 and for 1953-55, shows that the increase has been much

greater among elderly pedestrians (i.e. over 65 years of age) than among younger age-groups. In the Netherlands, for instance, the death rate of elderly pedestrians rose from 40.5 per million inhabitants to 96.8 per million—an increase of 139%, whilst the increase for all ages was 69.6. The corresponding figures for the United Kingdom were 159.1 and 178.9 per million—an increase of 16.1% compared with an increase of 3% for all ages. The only two countries in which there was a fall in the mortality rate among elderly pedestrians were the United States of America, where there was a drop of 12.8% for pedestrians over 65, and of 13.4% for all ages, and Ireland, where the corresponding figures were 7.5% and 5.9%.

Of the countries included in this survey, Japan had the highest over-all rate of traffic deaths, with an annual average of 2,336 pedestrians killed per million motor vehicles, compared with 129 in the United States of America where, as the WHO laconically points out, 'there are, of course, many fewer people walking on the roads'. The Union of South Africa (European population only) was the only country where a substantial increase in the number of pedestrians killed per million motor vehicles took place between 1950-52 and 1953-55: from 96 to 145.

SOME SMOKING STATISTICS

In 1957, over 100,000 million cigarettes were sold in the United Kingdom—the highest number for twelve years. Since 1939 the number of cigarettes smoked by men has increased by 6%—from about 64,000 million to about 68,000 million. In the same period smoking by women has increased by over 300%—from about 10,000 million to 30,000 million. The Dutch now smoke 1,222 cigarettes per head annually, compared with 549 in 1938, according to the Dutch Central Bureau of Statistics. Last year West Germans smoked 55,500 million cigarettes about 10% more than in 1956. There was a sharp rise in the number of filter-tipped cigarettes smoked, and in 1957 they amounted to nearly 40% of the total.

MODERN PRESCRIBING

According to a hospital pharmacist (*Pharm. J.*, 1958, **180**, 166), a woman patient admitted to hospital brought with her a package of drugs from home. This was found to contain 22 separate cardboard boxes, eight of which had been issued from hospital and the remainder from pharmacists in the vicinity. The number of tablets totalled 935, including 460 'drinamyl' tablets, 100 'sonalgin' tablets, and two different kinds of throat lozenges. In addition there were 20 suppositories.

PLAGUE

The world incidence of plague in 1957 was only 514, according to the World Health Organization. This low incidence is mainly due to the fact that there were only 44 cases in India, compared with 15,399 in 1951. In America last year active foci were still located in Brazil, Ecuador, and Peru, and one case was reported in the United States of America—in Texas.

MASS INJECTION APPARATUS

Soviet surgical instrument makers have developed an 'automatic mass injection apparatus' which can administer 2000 'completely painless' injections a day, according to a Moscow radio message.

HOLIDAYS FOR BLOOD DONORS

Blood donors in Hungary who give blood ten times and enrol another 15 donors are to be given a week's free holiday, whilst those who give blood ten times and enrol 30 new donors are to have two weeks' holiday. The Hungarians are also proposing to reintroduce the old practice of giving recipients of blood transfusions the names of the donors of the blood so that they can send 'thank you' postcards to the donors.

OCTOGENARIAN TRIPLETS

Three sisters—all widows—who have just celebrated their 85th birthday in Copenhagen, claim to be the world's oldest triplets.

PUBLICATIONS

Cerebral Palsy Today, by Alan Moncrieff, C.B.E., M.D., F.R.C.P., is the address given at the 1957 annual meeting of the British Council for the Welfare of Spastics. (13 Suffolk Street, Haymarket, London, S.W.1, price 1s. 6d.)

Journey Through Adolescence, by Doris Odlum, M.R.C.S., L.R.C.P., D.P.M., discusses the strong and shifting emotions of the teenager, his relationship to his home, school, friends, pleasures, loves, and religion. Many will benefit from her sympathetic exposition of the adolescent's difficulties, for she is a consultant with a broad, humanist background. Too many adults are so very sure that they are right when they brow-beat the bewildered fifteen-year-old into obedience when more understanding and encouragement would be wiser. The book can be safely recommended to the worried parent, for whom it is chiefly written. It does not, however, refer to recent field studies in England, such as Pearl Jeph-

cott's 'Girls Growing Up' with its many facts about factory and office girls, nor does it discuss such medical questions as whether delayed puberty can be of psychological origin. (Delisle Ltd., price 10*s.* 6*d.*)

Parasitology (*Protozoology and Helminthology*) *in Relation to Clinical Medicine*, by K. D. Chatterjee, has been derived from the author's 'Human Parasites and Parasitic Diseases', published in 1952, by removal of about three-quarters of the text and, unhappily, all the photographic illustrations which were such a splendid feature of the original work. The object of this severe reduction has been to produce a textbook suitable in content and price for students of medical parasitology, and, whilst the resulting work is entirely adequate, especially as regards the diseases of India, the ruthless though doubtless inevitable pruning has deprived it of much of its individuality. (S. Bhattacharyya & Co., price 12.50 rupees.)

Cancer and Common Sense, by George Crile Jun., M.D.—In this little book the author, writing for lay men and women, deplores the use of 'the weapon of fear' in a cancer campaign. He explains that cancer is a broad spectrum of individual diseases related to one another only in name, and he goes on to discuss not only the difficulties of diagnosis and the uncertainties of treatment, but also the professional perfectionism to which specialists are prone, the fallacies of statistics, and the hidden cost of cure. He has little use for prophylaxis; except for local minor operations for polypi and the like, there are few operations that are valuable in the prevention of cancer. 'If all these indications were followed up', said Herbert Williamson many years ago, 'what a holocaust of uteri there would be!' It is quite probable that patients and their relatives who read this book will find themselves more confused than before, and they would be better advised to spend their time in a confidential talk with an experienced and reliable family doctor. (Robert Hale Ltd., price 10*s.* 6*d.*)

The Planning and Organization of Central Syringe Services, by Brigadier J. D. Welch *et al.*—Any hospital planning a central syringe service will find a fund of information in this booklet, as it deals in great detail with the accommodation, staffing, equipment, and day-to-day working methods, and has a section on capital and running costs. It is likely, however, that the booklet will be of most use to those in charge of established syringe services who will find many helpful suggestions. It may well be that they will disagree with some, e.g., that an experienced nurse should be in charge, which quite defeats one of the objects of a central syringe service. Also, novel and costly apparatus tends to be advocated unnecessarily. (Nuffield Provincial Hospitals Trust, price 2*s.* 6*d.*)

Nomina Anatomica, by Prof. Dr. Fr. Kopsch, edited by Prof. Dr. K..H. Knese, fifth edition.—Professor Knese has produced with commendable expedition and care a comparison between the Basle nomenclature of 1895 (B.N.A.), the Jena revision of 1933 (I.N.A.) and of the revision carried out by the International Anatomical Nomenclature Committee and accepted at the Sixth International Congress of Anatomists, held in Paris in 1955 (P.N.A.). The three terminologies are arranged in alphabetical order in easily usable form, and will provide a useful source of reference for those involved in the intricacies of international anatomical nomenclature. (Georg Thieme, price DM 6.40.)

Juvenile Epilepsy, WHO Technical Report Series No. 130, deals clearly and concisely with the causation, prevalence and psychology of epilepsy in youth, and gives full advice on treatment by drugs and on social and educational care. It will help all general practitioners in their understanding and handling of such cases. Most consultants would also benefit from reading it. It is a pity that it is not bound in stiff covers. (H.M. Stationery Office, price 1*s.* 9*d.*)

The Disease of Tobacco Smoking and its Cure, by Lennox Johnston, M.B., gives the facts about the consequences of tobacco-smoking, including the relation of smoking to lung cancer, and discusses the methods of stopping smoking. Would it not be better to reason with the smoker than to call him a liar, a psychopath and a sufferer from delusions? Physicians will not agree with the author's shock-treatment of smokers. Much of the book is taken up with the author's grudge against the B.M.A., editors of medical journals and the M.R.C. The Press is indeed right in calling Dr. Johnston 'Britain's No. 1 opponent of smoking'. (Christopher Johnson, price 3*s.* 6*d.*)

CORRIGENDA.—Professor A. G. R. Lowdon asks us to correct an error in his article on 'Minor Surgical Procedures' in our February issue (p. 248). The last word in line 41 should read 'intramuscular' and *not* 'intravenous'.

Professor Ian G. W. Hill asks us to state that on page 182 of his article in our February issue (line 22) 'prothrombin index' should read 'prothrombin concentration'.

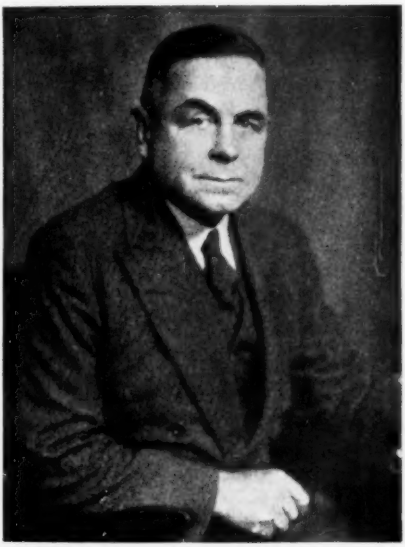
THE PRACTITIONER

Fifty Years Ago

'It is the plain duty of us doctors who are Life's paying guests, to be thankful for what we have received'.—Stephen Paget: *Confessio Medici:* Epilogue.

APRIL 1908

'NOTES BY THE WAY' begin with an interesting annotation entitled 'Short-lived Doctors': 'A medical contemporary recently drew attention to the fact that doctors are a short-lived class of the community. Laymen were naturally surprised. Their view presumably is that the days of doctors should be longer in the land than those of other people because they know better



Charles Herbert Fagge, M.S., F.R.C.S. (1873-1939)

than their patients what to "take" when they feel indisposed or are in the way of infection. Longevity, however, depends far more upon the manner of a man's life than upon the drugs which he swallows; and it is the doctor's misfortune that the exigencies of his calling often make it impossible for him to practise the hygienic doctrines which he preaches. *Obsta principiis* is one sound maxim on which it is specially hard for him to act. He cannot afford to lay up and nurse himself for trivial ailments . . . His night's rest may often be broken though he knows that seven hours' sleep is the ideal. He may have to take his meals irregularly, though he is well aware of the virtue of regular habits, or to rush out to an urgent case in the middle of his dinner, though he is always warning his patients that that way lies indigestion . . . if he is a general practitioner, those long holidays which he is fond of proclaiming to be essential are very seldom for him . . . the sum of the whole matter seems to be that the doctor, who made his own health his chief concern, would have to retire from practice in order to attend to it'.

Quite a modern note is struck by the title of the editorial comment 'X-Rays and their Dangers': 'The grave, but only partially explored, dangers attending experimentation with x-rays have been further exemplified by cases occurring both in England and America during the past month. Medical and scientific knowledge have often to be purchased at the price of such perils, faced sometimes knowingly and sometimes inadvertently . . . In the cases of the rays . . . the danger was not known to exist until the symptoms of the first case of x-ray dermatitis were manifested; and even then it was supposed that the danger could be nullified by the adoption of precautions since shown to be inadequate. The complaint is very insidious and very painful; and all honour is due to those who persevere with their work . . . in spite of the certain risk and the uncertain efficacy of the safeguards . . . Doctors engaged in the work of radiography should now protect themselves efficiently by using material opaque to the rays, and also employ specially constructed screens'.

The first of the 'Original Communications', 'The Treatment of Acute Pneumonia', was read by Samuel West, M.D., F.R.C.P., Physician and Lecturer on Medicine at St. Bartholomew's Hospital, in introducing a symposium at the Harveian Society on March 5, 1908. D. B. Lees, W. H. Blenkinsop, Percy Kidd ('For the relief of pain, I believe there is nothing to compare with leeches, and I have never known them to fail'.), Sidney P. Phillips, Arthur Latham, William Ewart, J. E. Squire, and W. H. Willcox spoke in the discussion.

F. Parkes Weber, M.D., F.R.C.P., Physician to the German Hospital and to the Mount Vernon Hospital for Chest Diseases, discourses on 'Polycythæmia in Diseases of the Heart and Lungs and during Residence at High Altitudes'. Douglas Drew, F.R.C.S., Senior Surgeon to the North-Eastern Hospital for Children, describes 'Injuries to the Head in Young Children'.

C. H. Fagge, M.S., F.R.C.S., Assistant

Surgeon to Guy's Hospital, concludes his article 'The Importance of Accurate Diagnosis and the Treatment of Fractures in the Vicinity of Joints': 'we must beware of estimating our success by perhaps a single x-ray picture taken in the most favourable plane which, even if it shows the normal outline of the bone perfectly restored, tells us nothing of the functional result, as the movements of the joint may be impaired, and the adjacent tendons may be adherent'. Charles Herbert Fagge was born in 1873, studied at Guy's Hospital, obtained the F.R.C.S. and M.S. in 1898, and became assistant-surgeon to the hospital in 1905, surgeon in 1917, and consulting surgeon in 1933. A highly skilled surgeon with sound judgment, he was particularly interested in the surgery of bones. His pocket anatomy went through nine editions. A sufferer from Parkinson's disease, he died in 1939. It was said of him that his expression changed as little with his moods as did his appearance with the years.

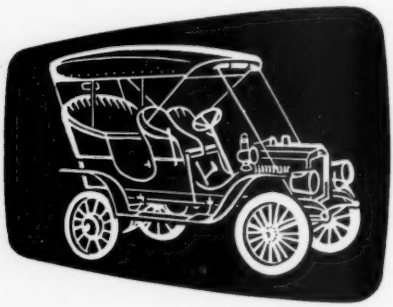
W. Ironside Bruce, M.D., Physician, X-Ray and Electrical Departments, Charing Cross Hospital, discusses 'The Relation between Sciatica and Disease of the Hip-joint'; P. Lockhart Mummery, F.R.C.S., Assistant-Surgeon, St. Mark's Hospital, writes on 'Chronic Colitis and its Surgical Treatment'; and F. J. Poynton, M.D., F.R.C.P., Assistant Physician to University College Hospital, and Physician to Out-Patients, Hospital for Sick Children, Great Ormond Street, reviews 'Some Recent Literature upon Arthritis'.

The feature 'Leaders in Modern Medicine' is devoted to James Syme who 'never wasted a word, a drop of ink, or a drop of blood. The story of his life shows very clearly that he certainly never wasted an opportunity, and, moreover, if such was not present, never hesitated to make one'.

'Recommended by Galen, Pliny, and the older writers for its therapeutical value', mistletoe, 'this survival of Druidical reverence (according to "Notes from Foreign Journals") seems to be on the point of developing a new usefulness'. René Gaultier of Paris recently showed that the drug 'has the property of reducing arterial tension . . . If these new properties are found trustworthy and practicable, a notable and welcome addition will be made to the limited class of "hypotensors" '.

Among the books reviewed are new volumes or new editions of several classics such as 'Allbutt and Rolleston', 'Manson', 'Jacobson', and 'Gee'. Fagge's 'Pocket Anatomy' in its sixth edition 'essentially retains its former character as a concise and accurate *multum in parvo* of anatomy'.

W. R. B.



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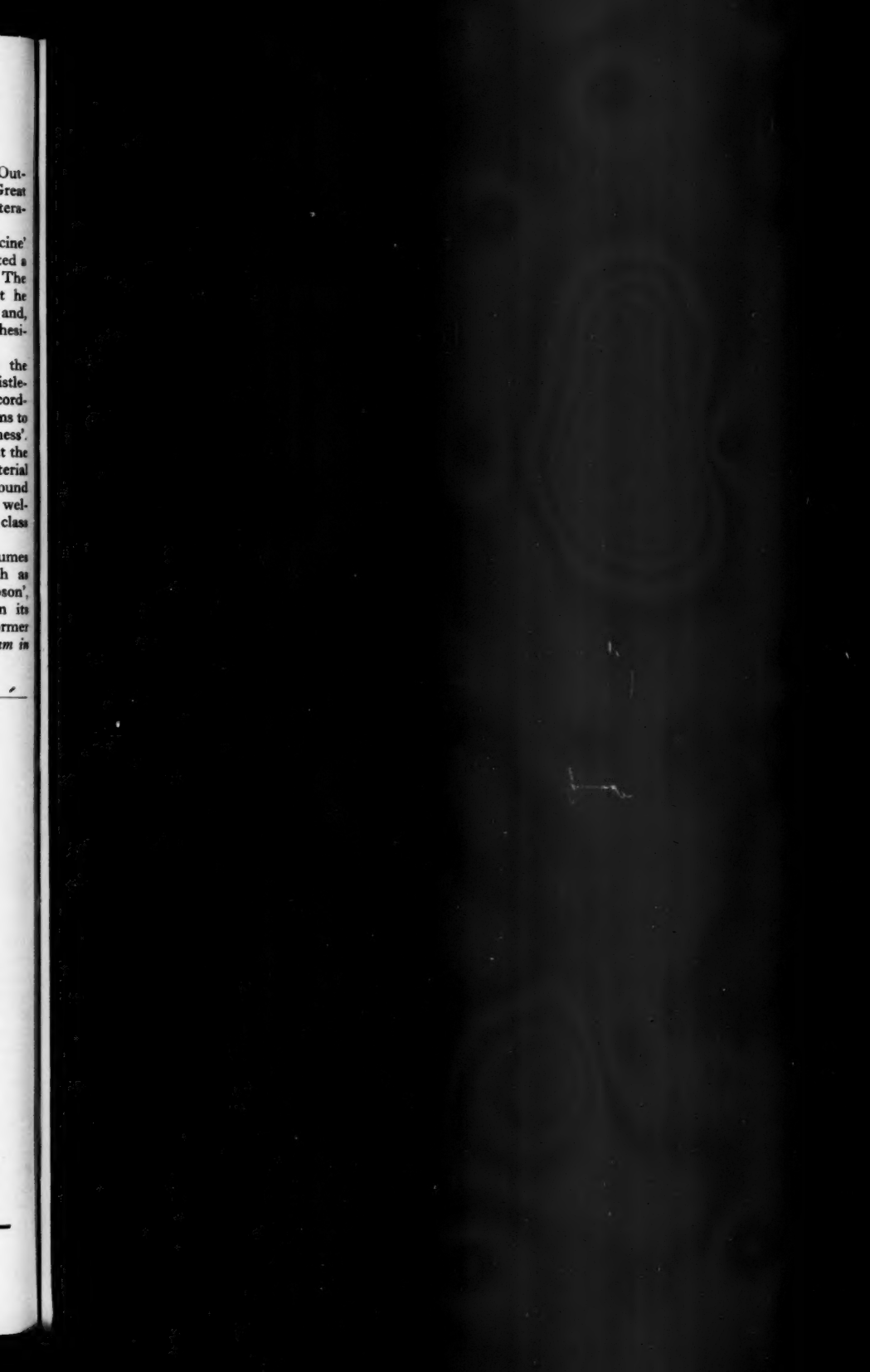
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